United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
United States Department
of the Interior, Bureau of
Land Management;
University of Idaho,
College of Agriculture; and
Idaho Soil Conservation
Commission

Soil Survey of Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

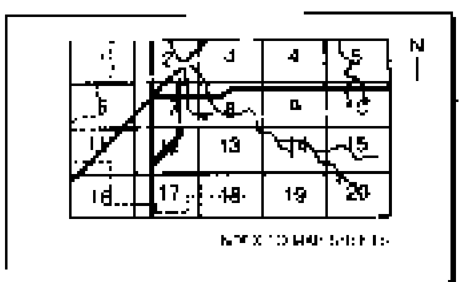
Detailed Soil Maps

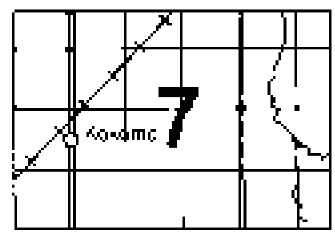
The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

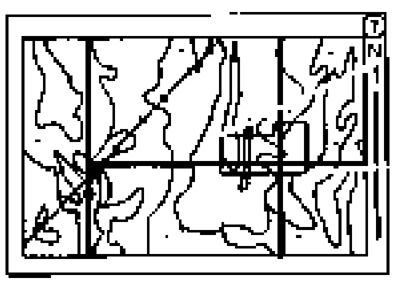
Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.





MAP SHEET



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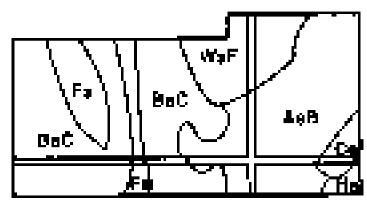


AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1991. Soil names and descriptions were approved in 1993. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1992. This survey was made cooperatively by the Natural Resources Conservation Service and the United States Department of the Interior, Bureau of Land Management; the University of Idaho, College of Agriculture; and the Idaho Soil Conservation Commission. The survey is part of the technical assistance furnished to the Blaine and Gooding Soil Conservation Districts and the Minidoka and Wood River Soil and Water Conservation Districts.

Since the publication of this survey, more information on soil properties may have been collected, new interpretations developed, or existing interpretive criteria modified. The most current soil information and interpretations for this survey are in the Field Office Technical Guide (FOTG) at the local Natural Resources Conservation Service field office. The soil maps in this publication may exist in digital form in a full quadrangle format. The digitizing of the maps is in accordance with the Soil Survey Geographic (SSURGO) database standards. During the digitizing process, changes or corrections to the maps may have occurred. These changes or corrections improve the matching of this survey to adjacent surveys and correct previous errors or omissions of map unit symbols or lines. If digital SSURGO certified maps exist for this survey, they are considered the official maps for the survey area and are part of the FOTG at the local Natural Resources Conservation Service field office.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Area south of Hagerman. Aquaculture in an area of Fathom-Kudlac-Anchustequi complex, 8 to 35 percent slopes, in foreground. Irrigated cropland in an area of Fathom-Taunton complex, 1 to 4 percent slopes, in center. Rangeland in an area of Rubbleland-Typic Calciorthids complex, 20 to 65 percent slopes, in background.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

Contents

Issued 2002

Foreword

This soil survey contains information that affects land use planning in the Wood River Area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

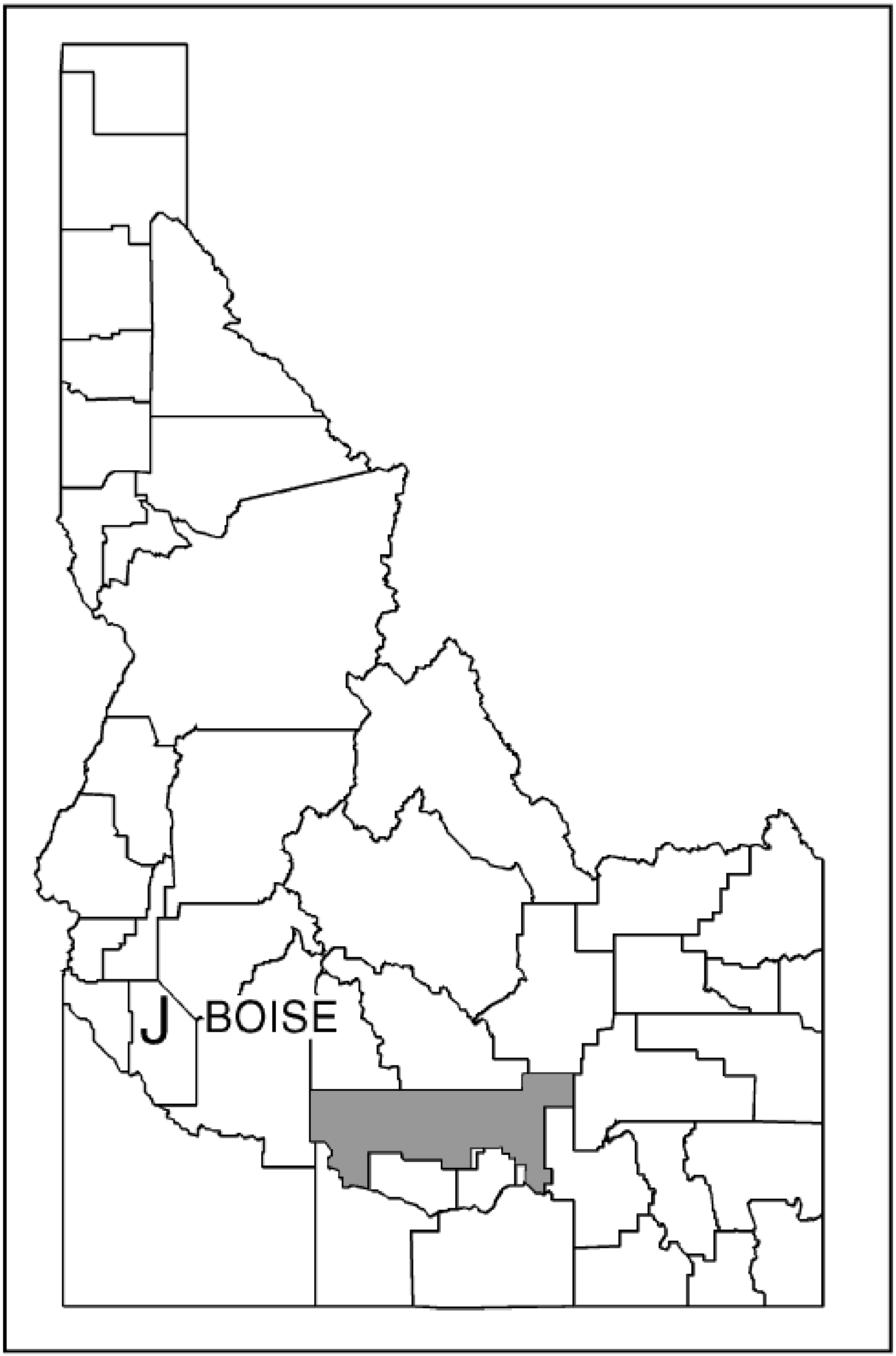
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations that affect various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Richard Sims
State Conservationist
Natural Resources Conservation Service



Location of Wood River Area in Idaho.

Soil Survey of Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

By Mark E. Johnson, Natural Resources Conservation Service

Fieldwork by Mark E. Johnson, Glenn A. Hoffmann, W.D. Harrison, Maureen S. Boling, Peter F. Biggam, Tony N. Tolsdorf, Dave J. Trochlell, and Karen Langersmith, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
United States Department of the Interior, Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Wood River Area is in the south-central part of Idaho. It includes about 751,800 acres in Blaine County, 469,300 acres in Gooding County, 344,320 acres in Lincoln County, and 218,600 acres in Minidoka County. The total area is about 1,784,020 acres, or 2,788 square miles. About 89 percent of the total area is rangeland, and about 11 percent is irrigated cropland and pastureland. Urban land makes up less than 0.2 percent of the area. The survey area includes private, State, and Federal land. The Federal land is administered by the Bureau of Land Management, and the State land is administered by the Idaho Department of Lands. Gooding is the county seat of Gooding County; Shoshone, Lincoln County; Rupert, Minidoka County; and Hailey, Blaine County. The population of the survey area was about 14,906 in 1990.

The survey area includes parts of the central Snake River Plain and the Bennett Hills. Most of the area is a gently undulating plain of lava flows and low shield volcanoes. Many drainageways flow into ephemeral playa lakes. The Big Wood and Little Wood Rivers flow in a southwesterly direction across the western half of the survey area and join the Snake River near Tuttle. The Snake River flows in a deep canyon along the southwestern boundary of the survey. In the northwestern corner of the survey area is the Bennett Hills region, which consists of deeply dissected plateaus, rolling hills, and an area of scenic rock sculptures and canyons called “Gooding City of the Rocks.” Many high-gradient, deeply entrenched streams flow southward through the Bennett Hills region, the largest of which is Clover Creek.

The lowest elevation in the survey area, about 2,700 feet, is at Bliss Dam, which is on the Snake River, in the southwestern corner of the area. The highest elevation, about 6,200 feet, is in the Bennett Hills region, northwest of Gooding, on the boundary between Camas and Gooding Counties.

The largest industries in the survey area are dairies; fish culture, which makes use of spring water from the basalt cliffs along the Snake River; cattle production; irrigated crop production; and food processing.

This soil survey updates the survey of Gooding County, Idaho, published in 1929 *(22)*. It provides additional information and has larger maps that show the soils in greater detail.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent survey areas. Differences are the result of better knowledge of soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

General Nature of the Survey Area

This section provides general information about the survey area. It discusses history, water supply, agriculture, and climate.

History

By Nan Reedy, district clerk, Gooding Soil Conservation District.

Prehistoric man occupied the survey area at least 15,000 years ago, when grasses and small lakes dominated the landscape and musk oxen, camels, elephants, horses, and bison roamed the area *(6)*. Beginning about 7,000 years ago, the climate gradually became drier and human populations declined. Man shifted from hunting large game to hunting rabbits, antelope, deer, and rodents, and he began fishing and gathering insects and roots. Shoshone and Northern Paiute Indians inhabited the area when the first white explorers arrived in the early 1800’s.

In the 1820’s the area became a buffer zone between the American Pacific Fur Company and the British Hudson’s Bay Company, who were competing for the beaver in the area. In 1843 people began to travel the Oregon Trail, and during the 1840’s and 1850’s emigrants began passing through the survey area on their way to destinations further west.

In the 1860’s, gold was discovered along the Snake River and cattle and sheep were introduced to the area. The Oregon Short Line Railroad was built in the 1880’s. Junction City, which is now the town of Shoshone, sprang up as a boomtown. It provided services to Hailey during the Wood River lead and gold rush of the 1880’s *(5)*. Settlement was slower in the town of Gooding, which was first called “Toponis,” meaning “black cherries” in Shoshone *(4)*.

Idaho became a state in 1890, and the Carey Act of 1894 opened up the area to a stampede of homesteaders eager to claim the land. Irrigated agriculture was first developed in areas along the Big Wood and Little Wood Rivers; however, the modern agricultural base resulted from the construction of large-scale government irrigation projects. The Reclamation Act of 1902 provided the funding and coordination needed to build dams and large canal systems, most of which were completed by 1920.

Water Supply

Water is the economic lifeblood of the area, the “magic” of Magic Valley. Surface irrigation water is supplied to the area by water diverted from the Snake River, above Milner Dam, into the Milner-Gooding and Northside Canals; by the Big Wood and Little Wood Rivers; and by several smaller streams. Some of the irrigation water also comes from deep wells, which tap the Snake Plain Aquifer. This natural subterranean water system is also the sole source of water for domestic use.

The Wendell area receives irrigation water from the Northside Canal system and from deep wells. Water diverted from the Little Wood River to the Dietrich Canal irrigates much of the Dietrich area. Water from the Richfield Canal is diverted into Magic Reservoir, which is north of Shoshone. It provides water for the Richfield area.

The Snake Plain Aquifer originates north and east of the survey area, where runoff filters down through the soils and flows in a southwesterly direction through interbedded sediment and porous Snake River Basalt. It is the sole source of well water in the survey area. The aquifer surfaces near the town of Hagerman, at Thousand Springs.

The above-ground water delivery systems in the survey area are made possible by a chain of reservoirs extending from the Idaho-Wyoming border to the Magic Valley area. About 55 percent of the cropland in the area is irrigated with water supplied by the Northside and Milner-Gooding Canals. The remaining cropland is irrigated by water pumped from the Snake Plain Aquifer, which is also the source of water for domestic, municipal, and industrial use. The average depth of the wells is about 200 to 320 feet, but depths range from artesian to more than 600 feet.

Water for the aquaculture industry is also supplied by the Snake Plain Aquifer. Fish farms flourish in Hagerman Valley, in the Niagara and Thousand Springs areas. Because the water temperature remains at a constant 58 degrees F and the water is sparkling clean, the trout industry in Gooding County is the largest in the world. About 80 percent of the nation’s commercial trout is raised in Magic Valley.

Agriculture

In 1992 there were about 200,704 acres of cropland in the survey area. There were about 1,000 farms, and the average farm was about 370 acres in size. About 60,000 acres were in alfalfa hay, 17,000 acres in pasture, 44,704 acres in wheat, 26,000 acres in potatoes, 22,000 acres in barley, 21,000 acres in corn, and 10,000 acres in conservation reserve programs. The total acreage of each crop varies from year to year.

In 1992 there were about 116,700 beef cattle, 32,500 dairy cows, and 17,000 sheep in the survey area. In the Hagerman area, the largest trout farming region in the nation, about 19 million pounds of trout is produced annually.

Sparse rainfall makes irrigation essential for successful farming. Most of the irrigation water is applied by sprinklers, but surface methods are dominant in some parts of the survey area. In 1904 construction of reservoirs, canals, and irrigation control structures began as a result of funds provided by the Reclamation Act of 1902.

The Blaine and Gooding Soil Conservation Districts and the Minidoka and Wood River Soil and Water Conservation Districts serve the area. They work to reduce water and wind erosion and to minimize stream pollution by teaching and encouraging good stewardship.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Bliss, Idaho, in the period 1931 to 1990 and at Richfield, Idaho, in the period 1948 to 1990. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is about 30 degrees F at Bliss and 24 degrees at Richfield. In summer, the average temperature is about 88 degrees at Bliss and 83 degrees at Richfield. The average annual minimum temperature is about 36 degrees at Bliss and 32 degrees at Richfield, and the average annual maximum temperature is about 64 degrees at Bliss and 59 degrees at Richfield. The lowest temperature on record, which occurred at Bliss, is -35 degrees. The highest recorded temperature, which occurred at Bliss, is 110 degrees.

Growing degree days are shown in table 1. They are equivalent to “heat units.” During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 9 inches at Bliss and 11 inches at Richfield. Of this, 33 percent usually falls in April through September. The growing season for most crops falls within this period.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

Special remote sensing techniques were used during this soil survey to aid in determining the composition and location of map units. Satellite imagery and large-scale aerial photographs were used to help soil scientists identify and quantify soils in remote and inaccessible areas.

Computer-generated maps of the southeastern part of the survey area were developed from satellite multispectral scanner imagery. The special symbols on the maps portray various soil-vegetation-landscape characteristics important in the area. These maps and the field maps were used to help identify map units in remote areas *(8)*.

Aerial observations were conducted to determine the composition of map units affected by soil wetness. Computerized scanning of aerial photographs helped to determine the percentage of wet areas within specific map units. Digital maps depicting significant tonal changes as a result of wetness were used to help determine the composition of map units in areas that were not easily accessible.

Helicopters were also used to observe some areas that were otherwise inaccessible.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in accurately locating boundaries.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Some of the boundaries on the general soil map of this survey area do not match those on the maps of adjacent counties, and some of the soil names and descriptions do not fully agree. Differences are a result of improvements in the classification of soils, particularly modifications or refinements in soil series concepts, and variations in the intensity of mapping or in the extent of the soils within the counties. The differences are explained in detail in the final field review report, which is on file at the Natural Resources Conservation Service in Boise, Idaho.

The general map units in this survey have been grouped into general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

Soils that Formed in Lacustrine Sediment and Eolian Deposits Reworked by Water, and Rubbleland; on Terrace Escarpments

Number of map units: 1
Percentage of survey area: 1 percent

1. Fathom-Kudlac-Rubbleland

Somewhat excessively drained and well drained soils that are deep to a hardpan and very deep, and Rubbleland; on terrace escarpments

Percentage of survey area: 1 percent
Elevation: 2,700 to 3,200 feet
Frost-free period: 120 to 140 days
Average annual precipitation: 7 to 9 inches
Major components: Fathom soils on undulating toeslopes, Kudlac soils in convex positions, and Rubbleland on escarpments
Minor components: Bahem and Anchustequi soils and Rock outcrop
Major use: Wildlife habitat
Limitations for use: Slope, areas of Rubbleland, and low available water capacity of the Fathom soil

Soils that Formed in Mixed Alluvium and Eolian Deposits Reworked by Water; on Stream Terraces

Number of map units: 2
Percentage of survey area: 4 percent

2. Quencheroo-Burch-Dryck

Well drained, deep and very deep soils; on stream terraces

Percentage of survey area: 2 percent
Elevation: 3,500 to 4,600 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 13 inches
Major components: Quencheroo, Burch, and Dryck soils on stream terraces
Minor components: Deter and Loupence soils and soils that are similar to the Quencheroo, Burch, and Dryck soils but are wet
Major uses: Pastureland, hayland, rangeland, and wetland wildlife habitat
Limitations for use: Depth to sand and gravel and hazard of flooding

3. Tupper-Fathom-Ephrata

Somewhat excessively drained and well drained soils that are deep to a hardpan and very deep; on stream terraces

Percentage of survey area: 2 percent
Elevation: 2,700 to 3,200 feet
Frost-free period: 120 to 140 days
Average annual precipitation: 7 to 9 inches
Major components: Tupper soils in convex positions, Fathom soils in concave positions, and Ephrata soils in smooth intermediate positions between areas of the Tupper and Fathom soils
Minor components: Kecko, Bahem, and Quincy soils, Histic Fluvaquents, and Typic Haplaquolls
Major uses: Rangeland and wildlife habitat
Limitations for use: Boulders in the surface layer and low available water capacity of the Fathom soils

Soils that Formed in Loess and Mixed Eolian Deposits Reworked by Water, and Lava Flows and Rock Outcrop; on Basalt Plains, Buttes, Plateaus, and Mesas

Number of map units: 12
Percentage of survey area: 71 percent

4. Paulville-McPan-Starbuck

Well drained soils that are shallow, moderately deep to a hardpan, and very deep and have a loamy surface layer; on basalt plains and buttes

Percentage of survey area: 12 percent
Elevation: 3,200 to 4,700 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Paulville soils in drainageways and McPan and Starbuck soils in convex positions
Minor components: Power, Hoosegow, and Farmell soils and Rock outcrop on plains and Elijah, Minveno, Idow, Besslen, and Bruncan soils on buttes
Major uses: Rangeland and wildlife habitat
Limitations for use: Depth to bedrock or to a hardpan, slope, and areas of Rock outcrop

5. Sidlake-Paulville-Starbuck

Well drained soils that are shallow, moderately deep, and very deep and have a medium textured or moderately coarse textured surface layer; on basalt plains and buttes

Percentage of survey area: 11 percent
Elevation: 3,400 to 4,700 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Sidlake soils in convex positions and on side slopes, Paulville soils in depressions, and Starbuck soils in convex positions
Minor components: Hoosegow and Farmell soils and Rock outcrop on plains and Snowmore, Wako, Minveno, Idow, and Besslen soils on buttes
Major uses: Rangeland, wildlife habitat, and cropland
Limitations for use: Depth to bedrock, slope, and hazard of erosion by wind

6. Lava flows-Lithic Torriorthents

Lava flows, and well drained, very shallow soils; on basalt plains

Percentage of survey area: 9 percent
Elevation: 3,500 to 4,400 feet
Frost-free period: 90 to 120 days
Average annual precipitation: 9 to 13 inches
Major components: Lava flows and Lithic Torriorthents in slightly concave positions (see fig. 1, page 23)
Minor components: Cinderhurst and similar soils that are moderately deep and are above 4,400 feet
Major use: Wildlife habitat
Limitations for use: Areas of Lava flows and very shallow depth to bedrock

7. McCarey-Beartrap-Rock outcrop

Well drained, cool, moderately deep and deep soils, and Rock outcrop; on basalt plains

Percentage of survey area: 8 percent
Elevation: 4,700 to 5,400 feet
Frost-free period: 70 to 90 days
Average annual precipitation: 11 to 16 inches
Major components: McCarey soils in intermounds

and on side slopes, Beartrap soils on mounds, and Rock outcrop scattered throughout the unit (see fig. 2, page 24)
Minor components: Splittop, Atomic, Molyneux, and Pedleford soils
Major uses: Rangeland and wildlife habitat
Limitations for use: Areas of Rock outcrop, depth to bedrock, slope, and short frost-free period

8. Gooding-Catchell-Power

Well drained soils that are moderately deep and deep to a hardpan and very deep and have a fine textured to medium textured subsoil; on basalt plains

Percentage of survey area: 7 percent
Elevation: 3,200 to 5,000 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Gooding and Power soils in smooth, nearly level or slightly concave positions and Catchell soils in convex positions
Minor components: Chilcott, McHandy, Elijah, and Linkletter soils
Major uses: Cropland and rangeland
Limitations for use: Depth to a claypan or hardpan or to bedrock, slow permeability of the subsoil, and hazard of erosion by water

9. Deerhorn-Rehfield-Rock outcrop

Well drained soils that are moderately deep to a hardpan and very deep and have a dark-colored surface layer, and Rock outcrop; on basalt plains and buttes

Percentage of survey area: 6 percent
Elevation: 4,300 to 4,800 feet
Frost-free period: 85 to 100 days
Average annual precipitation: 11 to 13 inches
Major components: Deerhorn soils in convex positions, Rehfield soils in drainageways, and Rock outcrop scattered throughout the unit
Minor components: Wildors, Cox, Rekima, and Pagari soils and Playas
Major uses: Rangeland and wildlife habitat
Limitations for use: Depth to a hardpan, slope, areas of Rock outcrop, hazard of erosion by wind, and hazard of erosion by water in the steeper areas

10. Vining-Kecko-Rock outcrop

Well drained soils that are moderately deep, deep to a hardpan, and very deep and are moderately coarse textured, and Rock outcrop; on basalt plains

Percentage of survey area: 4 percent
Elevation: 3,300 to 4,700 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Vining soils in convex positions, Kecko soils in depressions, and Rock outcrop scattered throughout the unit (see fig. 3, page 25)
Minor components: Starbuck, Quincy, Taunton, Snowmore, and Besslen soils
Major uses: Rangeland and wildlife habitat
Limitations for use: Areas of Rock outcrop, depth to bedrock, slope, and the hazard of wind erosion

11. Marley-Bailing-Kinzie

Well drained soils that are moderately deep and deep to a hardpan and have a dark-colored surface layer and a fine textured or moderately fine textured subsoil; on basalt plains and buttes

Percentage of survey area: 4 percent
Elevation: 4,200 to 5,000 feet
Frost-free period: 85 to 100 days
Average annual precipitation: 11 to 13 inches
Major components: Marley soils in slightly concave positions and Bailing and Kinzie soils in convex positions (see fig. 4, page 26)
Minor components: Darrah, Hamrub, Lobeisner, Bahem, and Schnipper soils; Rock outcrop; and Starhope, Mug, and Polecreek soils in areas above 5,000 feet
Major uses: Rangeland and cropland
Limitations for use: Depth to a claypan or hardpan and to bedrock and hazard of erosion by water

12. Hobby-Tschamman-Blisshill

Well drained soils that are moderately deep and deep to a hardpan and moderately deep; on basalt plateaus and mesas

Percentage of survey area: 3 percent
Elevation: 3,900 to 5,200 feet
Frost-free period: 85 to 100 days
Average annual precipitation: 11 to 13 inches

Major components: Hobby and Tschamman soils in convex positions and Blisshill soils in drainageways (see fig. 5, page 27)
Minor components: Bray soils; Rubbleland; and Schooler, Duguesclin, and Willho soils in areas above 5,000 feet
Major uses: Rangeland and wildlife habitat
Limitations for use: Stones in the surface layer, shrink-swell potential, depth to a claypan or hardpan and to bedrock, and hazard of erosion by water

13. Wendell-Wako-Ackelton

Well drained soils that are moderately deep and deep to a hardpan and have a coarse textured surface layer; on basalt plains and buttes

Percentage of survey area: 3 percent
Elevation: 3,200 to 4,200 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Wendell and Wako soils in convex positions and Ackelton soils in concave positions
Minor components: Rekima, Bruncan, Kecko, Taunton, Hoosegow, Sidlake, and Harsan soils on plains
Major uses: Cropland and rangeland
Limitations for use: Depth to a hardpan and to bedrock, slope, and the hazard of erosion by wind

14. Chijer-Ticeska-Taunton

Well drained soils that are moderately deep and deep to a hardpan and very deep; on basalt plains and buttes

Percentage of survey area: 2 percent
Elevation: 3,200 to 4,200 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Chijer soils in smooth concave positions and Ticeska and Taunton soils in slightly concave positions
Minor components: Bahem, Kecko, Power, and Purdam soils on plains and buttes and Minveno and Idow soils on buttes
Major uses: Cropland and rangeland
Limitations for use: Depth to a hardpan, slope, and hazard of erosion by wind

15. Fathom-Taunton-Jestrick

Somewhat excessively drained and well drained soils that are moderately deep and deep to a hardpan and very deep; on basalt plains

Percentage of survey area: 2 percent
Elevation: 3,200 to 4,200 feet
Frost-free period: 100 to 120 days
Average annual precipitation: 9 to 11 inches
Major components: Fathom and Taunton soils in smooth to slightly concave positions and Jestrick soils in convex positions
Minor components: Bahem, Kecko, Quincy, and Ackelton soils
Major uses: Cropland and rangeland
Limitations for use: Depth to a hardpan, slope, and hazard of erosion by wind

Soils that Formed in Colluvium and Residuum Derived from Basalt, Welded Tuff, and Rhyolite; on Foothills and Canyonsides

Number of map units: 3
Percentage of survey area: 24 percent

16. Fergie-Terracecreek-Gaibson

Cool, well drained, shallow to deep soils; on foothills and canyonsides

Percentage of survey area: 9 percent
Elevation: 4,700 to 6,200 feet
Frost-free period: 70 to 90 days
Average annual precipitation: 13 to 16 inches
Major components: Fergie soils on concave side slopes and toeslopes and Terracecreek and Gaibson soils on ridges and convex side slopes (see fig. 6, page 28)
Minor components: Rock outcrop; Molyneux, Moreglade, Duguesclin, Schooler, Willho, Stash, and Burch soils; and Dollarhide and Tusel soils on steep north aspects above 5,800 feet
Major uses: Rangeland and wildlife habitat
Limitations for use: Slope; shallow depth to bedrock; channers and gravel in the surface layer; hazard of erosion in steeper areas; and short frost-free period

17. Mulshoe-Elkcreek-Simonton

Cool, well drained, moderately deep and very deep soils; on foothills

Percentage of survey area: 8 percent
Elevation: 5,000 to 6,200 feet
Frost-free period: 60 to 90 days
Average annual precipitation: 13 to 16 inches
Major components: Mulshoe and Elkcreek soils in smooth, slightly convex positions and Simonton soils in concave positions (see fig. 7, page 29)
Minor component: Rock outcrop
Major uses: Rangeland and wildlife habitat
Limitations for use: Boulders and stones in the surface layer, hazard of erosion in the steeper areas, and short frost-free period

18. Nammoth-Quiero-Ruckles

Well drained, shallow and moderately deep soils; on foothills

Percentage of survey area: 7 percent
Elevation: 4,200 to 5,000 feet
Frost-free period: 85 to 100 days
Average annual precipitation: 11 to 13 inches
Major components: Nammoth soils on steep side slopes, Quiero soils on undulating structural benches, and Ruckles soils in eroded areas on structural benches (see fig. 8, page 30)
Minor components: Connet, Darrah, and Burwill soils and Rock outcrop that have slopes of 12 to 60 percent and are in areas of “City of the Rocks” welded tuff
Major uses: Rangeland and wildlife habitat
Limitations for use: Boulders and stones in the surface layer and hazard of erosion in the steeper areas

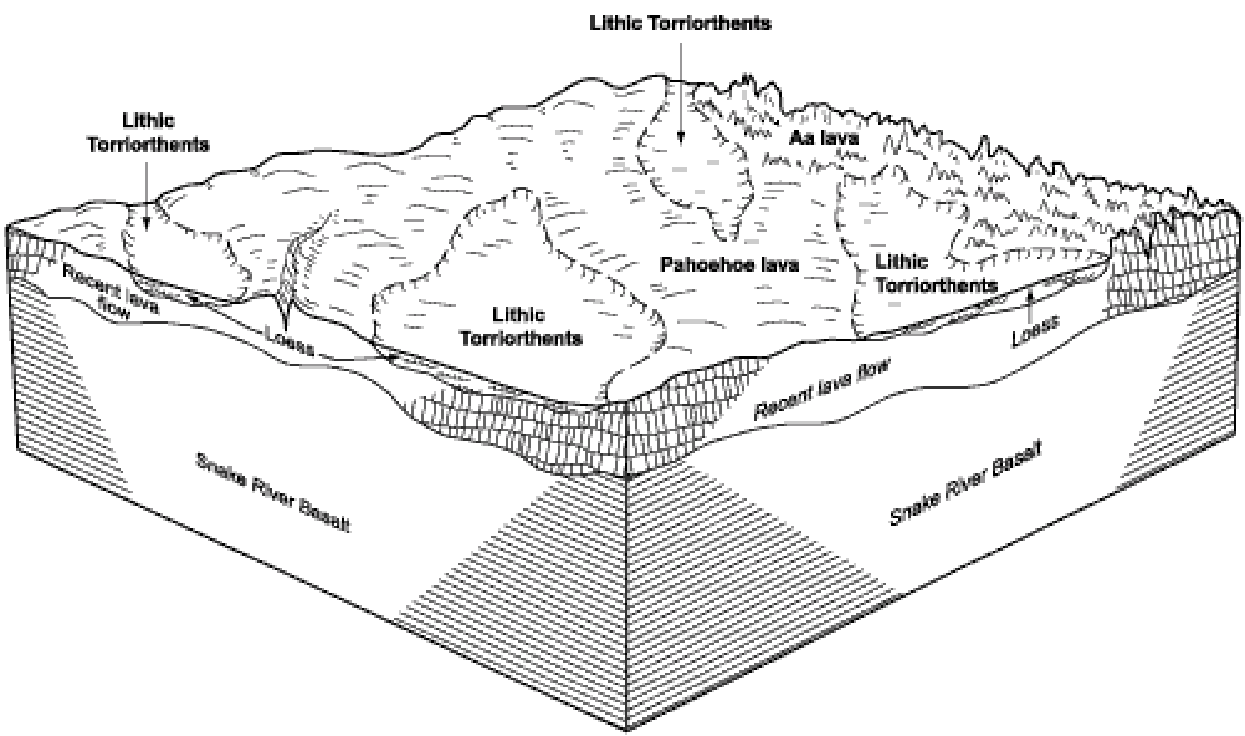


Figure 1.—Typical pattern of soils and underlying material in general soil map unit 6.

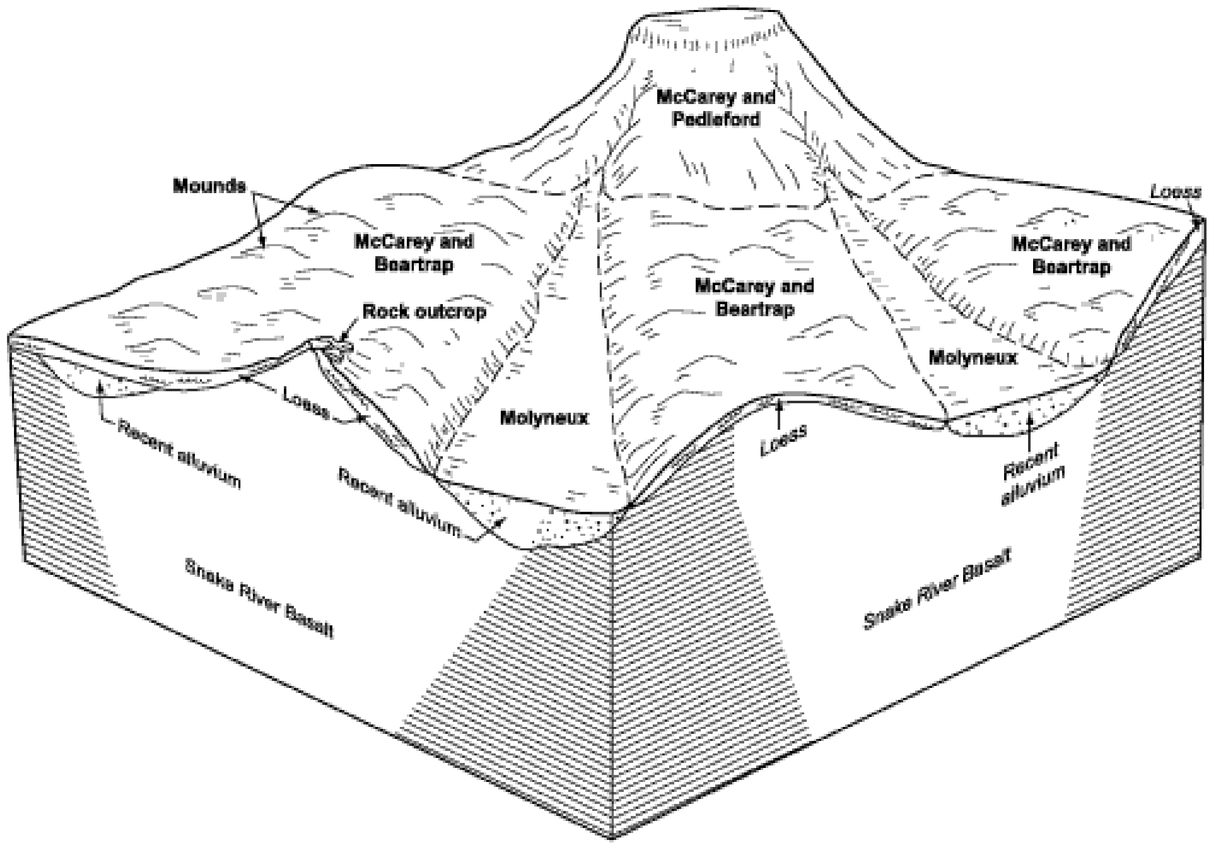


Figure 2.—Typical pattern of soils and underlying material in general soil map unit 7.

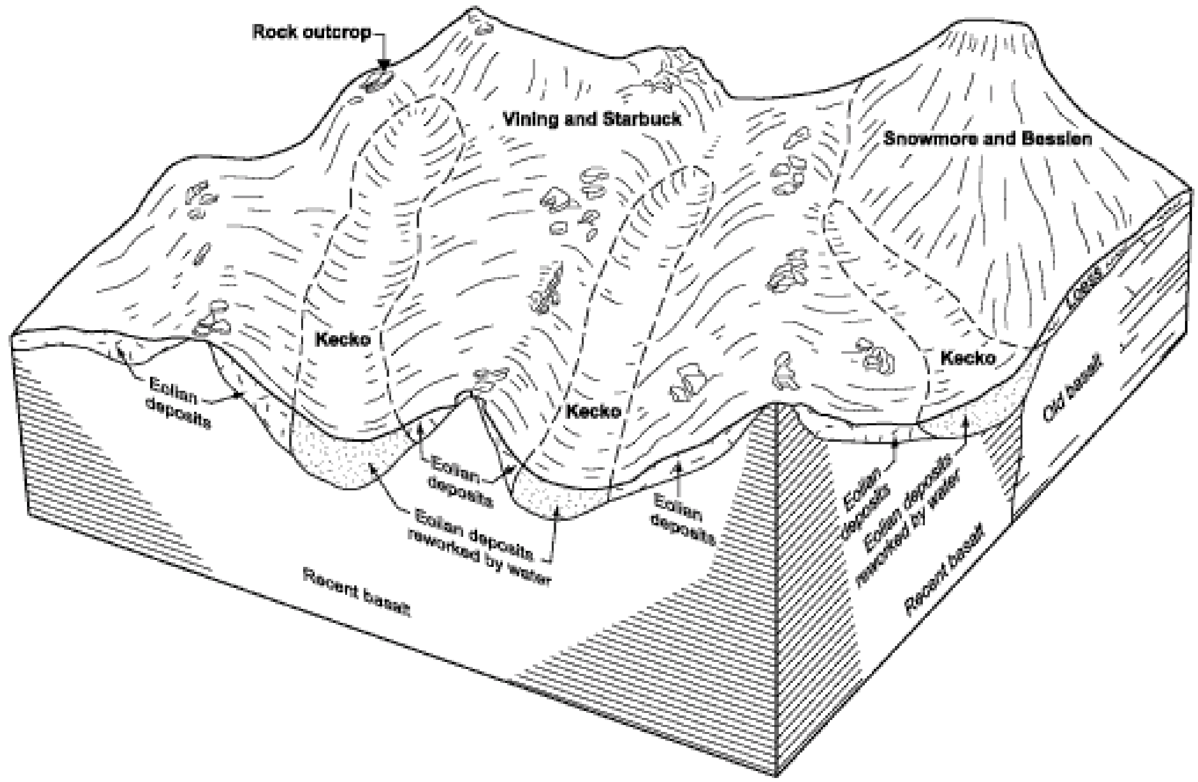


Figure 3.—Typical pattern of soils and underlying material in general soil map unit 10.

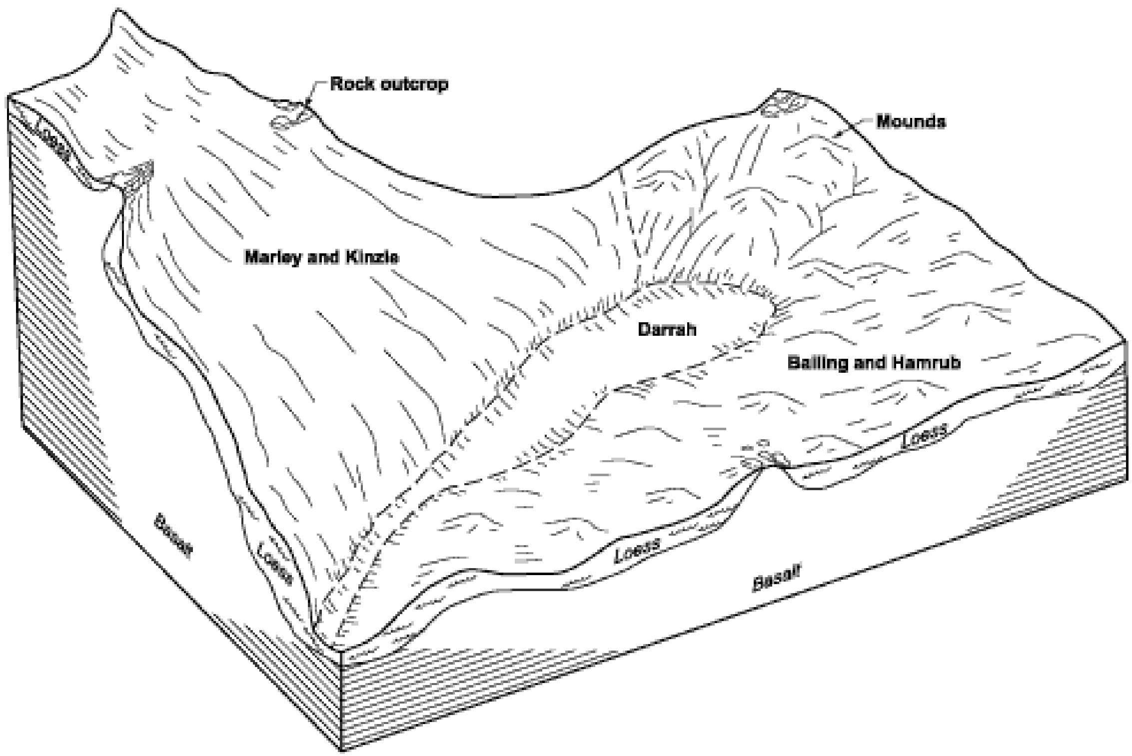


Figure 4.—Typical pattern of soils and underlying material in general soil map unit 11.

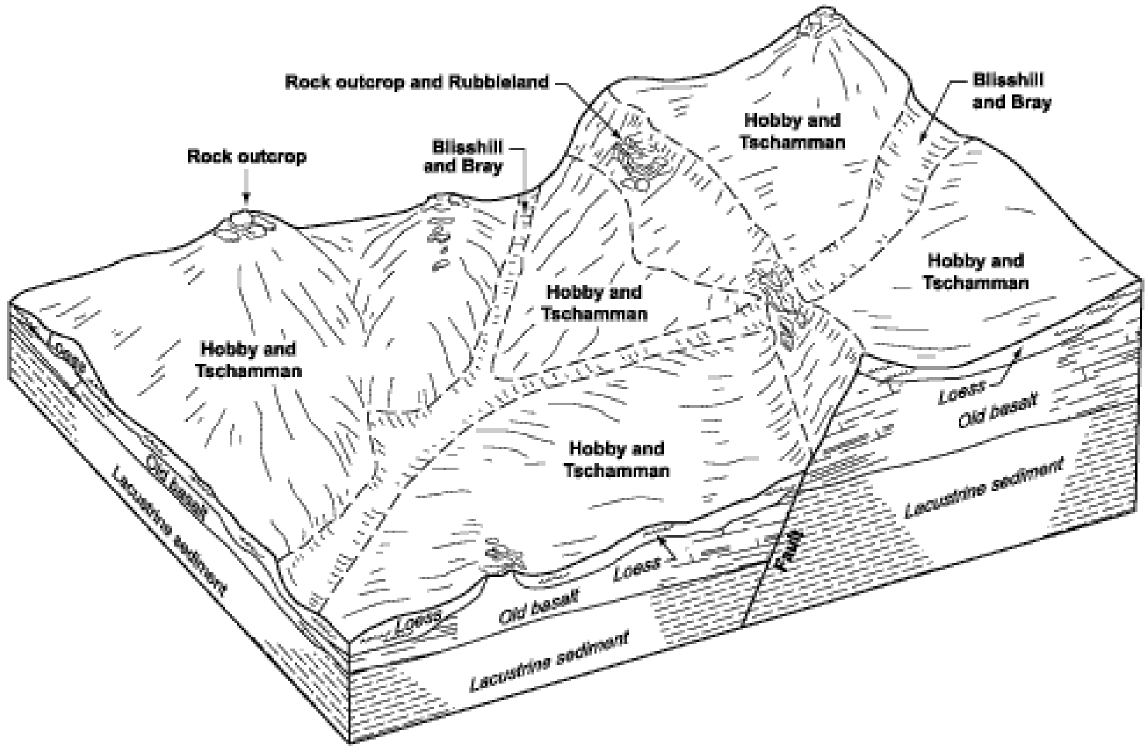


Figure 5.—Typical pattern of soils and underlying material in general soil map unit 12.

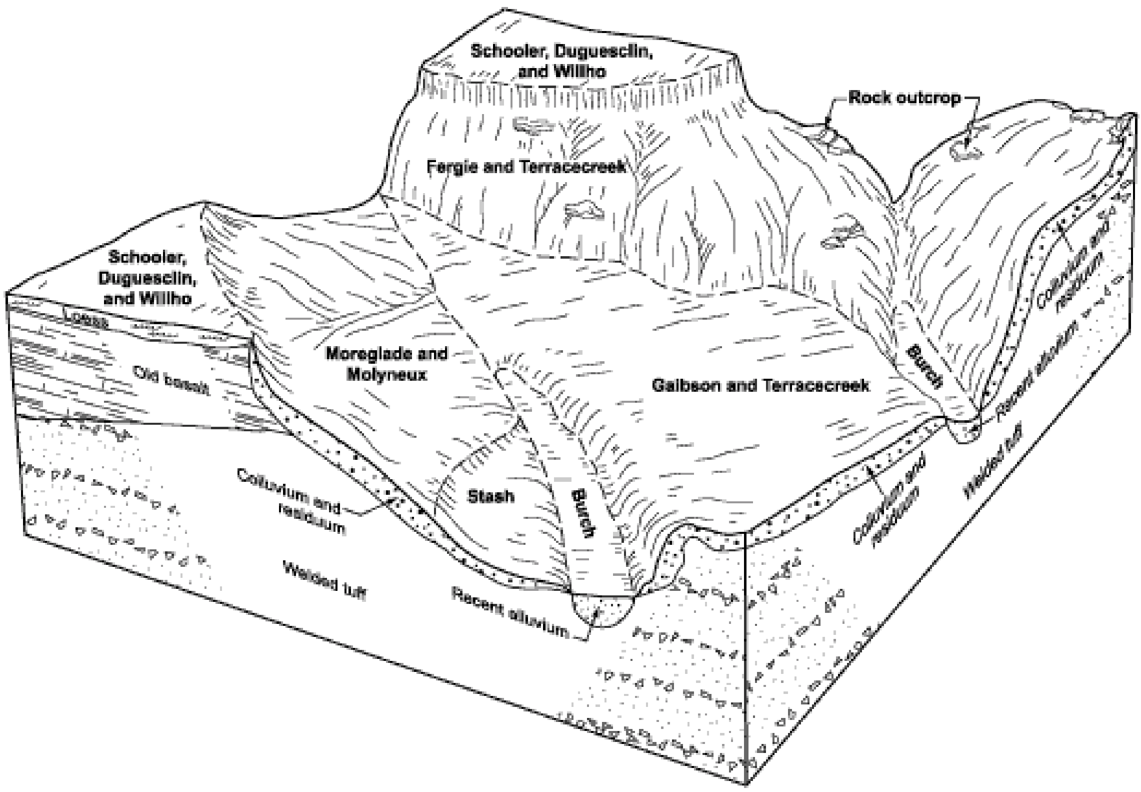


Figure 6.—Typical pattern of soils and underlying material in general soil map unit 16.

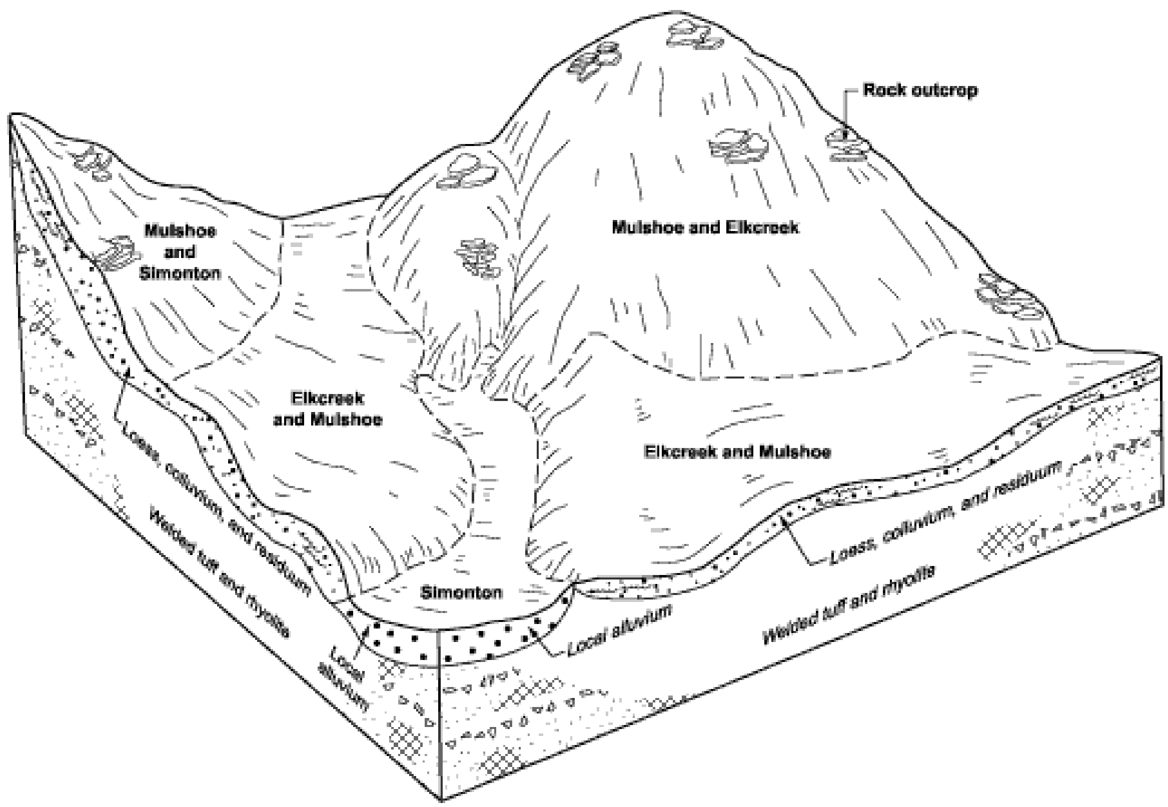


Figure 7.—Typical pattern of soils and underlying material in general soil map unit 17.

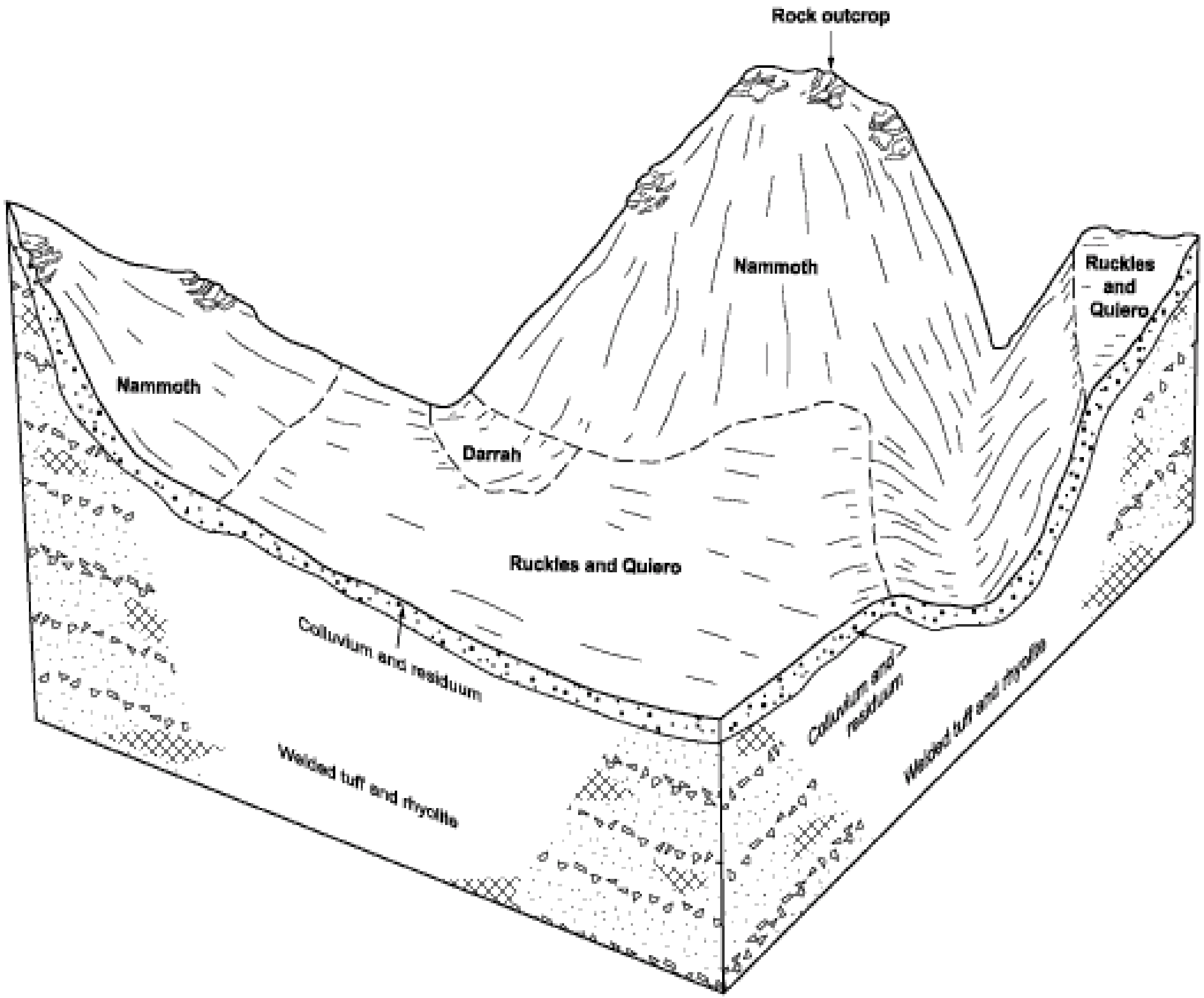


Figure 8.—Typical pattern of soils and underlying material in general soil map unit 18.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Gooding silt loam, 0 to 3 percent slopes, is a phase of the Gooding series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bailing-Darrah-Rock outcrop complex, 1 to 8 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Moreglade-Fergie association, 30 to 50 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Aridic Argixerolls and Xeric Torriorthents soils, 30 to 65 percent slopes, is an undifferentiated group in this survey area.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example.

Some of the boundaries on the detailed soil maps for this soil survey area do not match those on the maps for adjacent counties, and some of the soil names and descriptions do not fully agree. Differences are the result of modifications or refinements in soil series concepts, variations in the intensity of mapping, or extent of the soils in the survey area. The differences are explained in detail in the final field review report located at the Idaho State office of the Natural Resources Conservation Service.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

1—Ackelton fine sandy loam, 0 to 2 percent slopes

Composition

Ackelton fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Nearly level areas on basalt plains
Typical profile:
0 to 12 inches—brown and yellowish brown fine sandy loam
12 to 22 inches—yellowish brown sandy clay loam
22 to 26 inches—yellowish brown fine sandy loam
26 to 46 inches—light yellowish brown fine sandy loam
46 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Fathom fine sand in concave positions (10 percent)
- Wendell loamy fine sand in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIs, irrigated

2—Ackelton-Idow complex, 1 to 4 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—45 percent
Idow loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Side slopes, broad ridgetops, and basins on basalt plains
Typical profile:
0 to 9 inches—dark yellowish brown loamy fine sand
9 to 22 inches—brown fine sandy loam
22 to 28 inches—yellowish brown sandy clay loam
28 to 33 inches—brown loam
33 to 55 inches—pale brown loam
55 to 60 inches—pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 55 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Idow Soil

Position on landscape: Side slopes and broad ridgetops on basalt plains
Typical profile:
0 to 9 inches—dark yellowish brown loamy fine sand
9 to 18 inches—yellowish brown sandy clay loam
18 to 29 inches—light yellowish brown loam
29 to 34 inches—light yellowish brown silt loam
34 to 38 inches—pale brown silt loam
38 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Ackelton loamy fine sand and Idow loamy fine sand that have slopes of 4 to 6 percent (10 percent)
• Kecko loamy fine sand in positions similar to those of the Ackelton soil (5 percent)

Use and Management

Major uses: Cropland and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, dry beans, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Idow soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Idow soil.
• Excavation for irrigation mainlines and ditches is

limited by the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

3—Ackelton-Jestrick-Rock outcrop complex, 2 to 12 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—40 percent
Jestrick loamy fine sand and similar inclusions—35 percent
Rock outcrop—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,300 to 3,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—very pale brown loamy very fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—severe

Characteristics of the Jestrick Soil

Position on landscape: Convex areas on basalt plains
Slope: 4 to 12 percent
Typical profile:
0 to 5 inches—brown loamy fine sand
5 to 16 inches—yellowish brown fine sandy loam
16 to 22 inches—very pale brown cobbly fine sandy loam
22 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Slow
Hazard of erosion: By water—moderate or severe; by wind—severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Ridges

Contrasting Inclusions

• Ackelton and Jestrick soils that have slopes of 12 to 20 percent (5 percent)
• Taunton fine sandy loam that has slopes of 0 to 1 percent (5 percent)

Use and Management

Major uses: Rangeland, cropland, pasture, and hayland
Major management factors: Rock outcrop, hazards of wind and water erosion, depth to bedrock and to a hardpan, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The low available water capacity of the Jestrick soil limits the selection of species suitable for seeding.

• Planned grazing systems that encourage the growth of ground cover minimize the risks of wind and water erosion.

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Jestrick soil.
• Excavation for irrigation mainlines and ditches is limited by the areas of Rock outcrop and by the depth to the hardpan and bedrock in the Jestrick soil.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Jestrick soil.
• Excavation for irrigation mainlines and ditches is limited by the areas of Rock outcrop and by the depth to the hardpan and bedrock in the Jestrick soil.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Ackelton and Jestrick soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

4—Ackelton-Kecko complex, 1 to 5 percent slopes

Composition

Ackelton loamy sand and similar inclusions—65 percent
Kecko loamy fine sand and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,900 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Ackelton Soil

Position on landscape: Side slopes and broad ridgetops of stable sand dunes on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 37 inches—light yellowish brown loam
37 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Kecko Soil

Position on landscape: Side slopes and broad ridgetops of stable sand dunes on basalt plains
Typical profile:
0 to 14 inches—brown loamy fine sand
14 to 41 inches—yellowish brown fine sandy loam
41 to 60 inches—light yellowish brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Wako sandy loam on convex slopes (10 percent)
• Soils that are similar to the Ackelton and Kecko soils but have slopes of 5 to 7 percent (5 percent)
• Snowmore sandy loam on convex slopes (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factor: Hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, corn for silage, sugar beets, dry beans, and potatoes

Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

5—Ackelton-Wako fine sands, 3 to 8 percent slopes

Composition

Ackelton fine sand and similar inclusions—45 percent
Wako fine sand and similar inclusions—45 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,250 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Slope: 3 to 6 percent
Typical profile:
Five to ten percent of the surface is covered with cobbles.
0 to 10 inches—brown and pale brown fine sand
10 to 17 inches—yellowish brown and pale brown loamy fine sand and fine sandy loam
17 to 31 inches—light yellowish brown and yellowish brown sandy clay loam
31 to 43 inches—pale brown and yellowish brown fine sandy loam
43 to 61 inches—white, lime- and silica-cemented hardpan
61 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 43 inches
Runoff: Very slow or slow
Hazard of wind erosion: Very severe

Characteristics of the Wako Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 9 inches—brown fine sand
9 to 16 inches—yellowish brown loamy fine sand
16 to 32 inches—light yellowish brown, yellowish brown, and pale brown sandy clay loam and clay loam
32 to 37 inches—pale brown cobbly loam
37 to 49 inches—white, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 37 inches
Runoff: Slow
Hazard of wind erosion: Very severe

Contrasting Inclusions

• Quincy fine sand and Jestrick fine sand (10 percent)
• Small areas of soils that are similar to the Wako soil but have a salt-affected subsoil (high sodium) and are in areas of native rangeland

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of erosion, low available water capacity in the surface layer, depth to a cemented pan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

6—Ackelton-Wako loamy fine sands, 0 to 3 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—65 percent
Wako loamy fine sand and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 37 inches—light yellowish brown loam
37 to 53 inches—white and very pale brown sandy clay loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—very pale brown loamy fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 12 inches—pale brown loamy fine sand
12 to 25 inches—yellowish brown sandy clay loam and clay loam
25 to 31 inches—pale brown sandy clay loam
31 to 43 inches—white, lime- and silica-cemented hardpan
43 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Jestrick loamy fine sand and Ackelton and Wako soils that have slopes of 3 to 8 percent and are in convex positions (10 percent)
- Soils that are similar to the Wako loamy fine sand but have a salt-affected subsoil (high sodium) and are in areas of rangeland (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

7—Ackelton-Wako loamy fine sands, 3 to 8 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—55 percent
Wako loamy fine sand and similar inclusions—30 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Smooth and concave areas on basalt plains
Slope: 3 to 6 percent
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—very pale brown loamy fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Smooth and convex areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 12 inches—pale brown loamy fine sand
12 to 25 inches—yellowish brown sandy clay loam and clay loam
25 to 31 inches—pale brown sandy clay loam
31 to 43 inches—white, lime- and silica-cemented hardpan
43 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Wendell loamy fine sand and Rekima very stony fine sandy loam in convex positions (5 percent)
• Fathom loamy fine sand in concave positions (5 percent)
• Soils that are similar to the Wako soil but have a salt-affected subsoil (high sodium) and are in areas of native rangeland (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

8—Ackelton-Wendell complex, 1 to 4 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—60 percent
Wendell fine sandy loam and similar inclusions—30 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—very pale brown loamy very fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wendell Soil

Position on landscape: Convex areas and ridges on basalt plains
Typical profile:
0 to 8 inches—brown fine sandy loam
8 to 19 inches—pale brown loam
19 to 32 inches—very pale brown loam
32 to 39 inches—white, lime- and silica-cemented hardpan
39 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Jestrick loamy fine sand in convex positions (5 percent)
• Rekima stony loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to bedrock and to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wendell soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wendell soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

9—Ackelton-Wendell-Wako complex, 2 to 6 percent slopes

Composition

Ackelton loamy fine sand and similar inclusions—40 percent
Wendell loamy fine sand and similar inclusions—30 percent
Wako loamy fine sand and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,400 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 21 inches—brown loamy fine sand
21 to 32 inches—yellowish brown sandy clay loam
32 to 42 inches—very pale brown fine sandy loam
42 to 63 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 10 inches—brown and pale brown loamy fine sand
10 to 23 inches—yellowish brown sandy loam
23 to 27 inches—yellowish brown sandy clay loam
27 to 32 inches—white cobbly loam
32 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Hardpan at a depth of 32 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown and pale brown loamy fine sand
6 to 20 inches—yellowish brown sandy clay loam
20 to 38 inches—pale brown sandy clay loam
38 to 59 inches—white, lime- and silica-cemented hardpan
59 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Quincy fine sand in concave positions (7 percent)
• Starbuck fine sandy loam in convex positions (3 percent)

Use and Management

Major uses: Cropland, hayland, and pasture

Major management factors: Hazard of wind erosion, depth to a hardpan, depth to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity in the surface layer of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Wako and Wendell soils and the depth to bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity in the surface layer of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Wako and Wendell soils and the depth to bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

10—Anchustequi loam, 1 to 4 percent slopes

Composition

Anchustequi loam and similar inclusions—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,000 to 3,100 feet
Average annual precipitation: About 7 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 130 days

Characteristics of the Anchustequi Soil

Position on landscape: Concave areas and drainageways on lacustrine terraces
Typical profile:
0 to 7 inches—pale brown loam
7 to 11 inches—very pale brown loam
11 to 60 inches—white, light brownish gray, light gray, and pale brown, stratified silt loam to loamy very fine sand
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Depth to water table: 12 to 36 inches
Available water capacity: High
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Water table at a depth of 12 to 36 inches
Runoff: Slow

Contrasting Inclusions

• Kecko fine sandy loam on lacustrine terraces (10 percent)

Use and Management

Major uses: Pasture and hayland
Major management factors: Fluctuating water table and soluble salts in the surface layer

Hayland and Pasture

Commonly grown crops: Irrigated grass hay and pasture
Major management considerations:
• Irrigation water management is needed because of the accumulation of salts and the fluctuating water table.
• The accumulation of soluble salts limits the kinds of suitable forage species and the production of some species.
• Commonly used irrigation systems include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVw, irrigated

11—Antelope Springs loam, 1 to 4 percent slopes

Composition

Antelope Springs loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,000 to 3,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Antelope Springs Soil

Position on landscape: Gently sloping areas on fan terraces
Typical profile:
0 to 3 inches—grayish brown loam
3 to 22 inches—brown and pale brown loam and clay loam
22 to 64 inches—pale brown and very pale brown loam and clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium

Contrasting Inclusions

• Paulville loam in concave positions (10 percent)
• Springcove silt loam on stream terraces (5 percent)

Use and Management

Major use: Pasture
Major management factors: Salts in the subsoil and slow permeability

Pasture

Major management considerations:
• Irrigation water should be applied at specific rates because of the slow permeability of the subsoil.
• Adapted plant species that can tolerate the moderate amount of soluble salts in the subsoil should be selected.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most effective method of applying water.

Interpretive Groups

Capability classification: IIIs, irrigated

12—Argixerolls, 30 to 65 percent slopes

Composition

Argixerolls very stony loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,100 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Argixerolls

Position on landscape: Steep canyonsides
Example profile:
0 to 22 inches—very dark grayish brown very stony loam
22 to 48 inches—strong brown and reddish yellow very cobbly clay loam
48 to 60 inches—reddish yellow extremely bouldery loam
Depth class: Moderately deep to very deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Available water capacity: Low or moderate
Potential rooting depth: 20 to 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

• Rubbleland and Rock outcrop on steep side slopes (10 percent)
• Hobby extremely cobbly silt loam that has slopes of 2 to 10 percent (5 percent)
• Bray cobbly silt loam that has slopes of 1 to 6 percent and is on slump blocks (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, low available water capacity, and surface stones

Rangeland

Dominant vegetation in potential natural plant community: Xericensis big sagebrush, antelope bitterbrush, basin wildrye, and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of

livestock are limited by the steep slopes and surface stones.
• Planned grazing systems that encourage the growth of ground cover minimize the risk of water erosion.
• The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: 010AY036ID North Slope Stony 12-16 ARTRX/PSSP6

13—Aridic Argixerolls and Xeric Torriorthents soils, 30 to 65 percent slopes

Composition

- Aridic Argixerolls very stony loam and similar inclusions
- Xeric Torriorthents stony loam and similar inclusions

The soils in this map unit are not consistently associated in delineations.

Setting

Elevation: 3,200 to 5,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Aridic Argixerolls

Position on landscape: Convex slopes on canyonsides
Example profile:
0 to 2 inches—dark grayish brown very stony loam
2 to 10 inches—dark grayish brown sandy clay loam
10 to 22 inches—light yellowish brown clay loam
22 to 35 inches—light brownish gray loam
35 inches—semiconsolidated lacustrine sediment
Depth class: Moderately deep to very deep to lacustrine sediment
Drainage class: Well drained
Permeability: Slow or moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 60 inches, depending on depth to hard lacustrine material
Restriction to rooting depth: Semiconsolidated lacustrine sediment at a depth of 20 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Xeric Torriorthents

Position on landscape: Convex slopes on canyonsides
Example profile:
0 to 2 inches—light brownish gray stony loam
2 to 15 inches—light brownish gray loam
15 to 30 inches—light gray loam
30 inches—calcareous unconsolidated lacustrine sediment
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 10 to 40 inches, depending on depth to unconsolidated lacustrine sediment
Restriction to rooting depth: Unconsolidated lacustrine sediment at a depth of 10 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Badlands in steep, convex positions
- Linkletter gravelly loam in less sloping areas
- Sidlake and Banbury loams in areas of pillow basalt

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, low available water capacity, and surface stones

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass in areas that support vegetation
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and surface stones.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the Xeric Torriorthents limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIIe, nonirrigated

Range site: Aridic Argixerolls and Xeric Torriorthents—
011XY021ID South Slope Stony
8-12 ARTRW8/PSSP6

14—Bahem very fine sandy loam, 0 to 4 percent slopes

Composition

Bahem very fine sandy loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Bahem Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 11 inches—brown and pale brown very fine sandy loam
11 to 41 inches—very pale brown silt loam and very fine sandy loam
41 to 60 inches—pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Ticeska very fine sandy loam in convex positions (10 percent)
• Taunton very fine sandy loam in positions similar to those of the Bahem soil (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, sweet corn, corn for silage, and dry beans
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture (fig. 9)
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Suitable irrigation methods include sprinkler, furrow, and corrugation systems.

Interpretive Groups

Capability classification: IIe, irrigated

15—Bahem-Ephrata complex, 8 to 30 percent slopes

Composition

Bahem very fine sandy loam and similar inclusions—40 percent
Ephrata fine sandy loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Setting

Elevation: 2,700 to 3,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Bahem Soil

Position on landscape: Undulating drainageways on basalt plains
Typical profile:
0 to 11 inches—brown and pale brown very fine sandy loam
11 to 41 inches—very pale brown silt loam and very fine sandy loam
41 to 60 inches—pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate

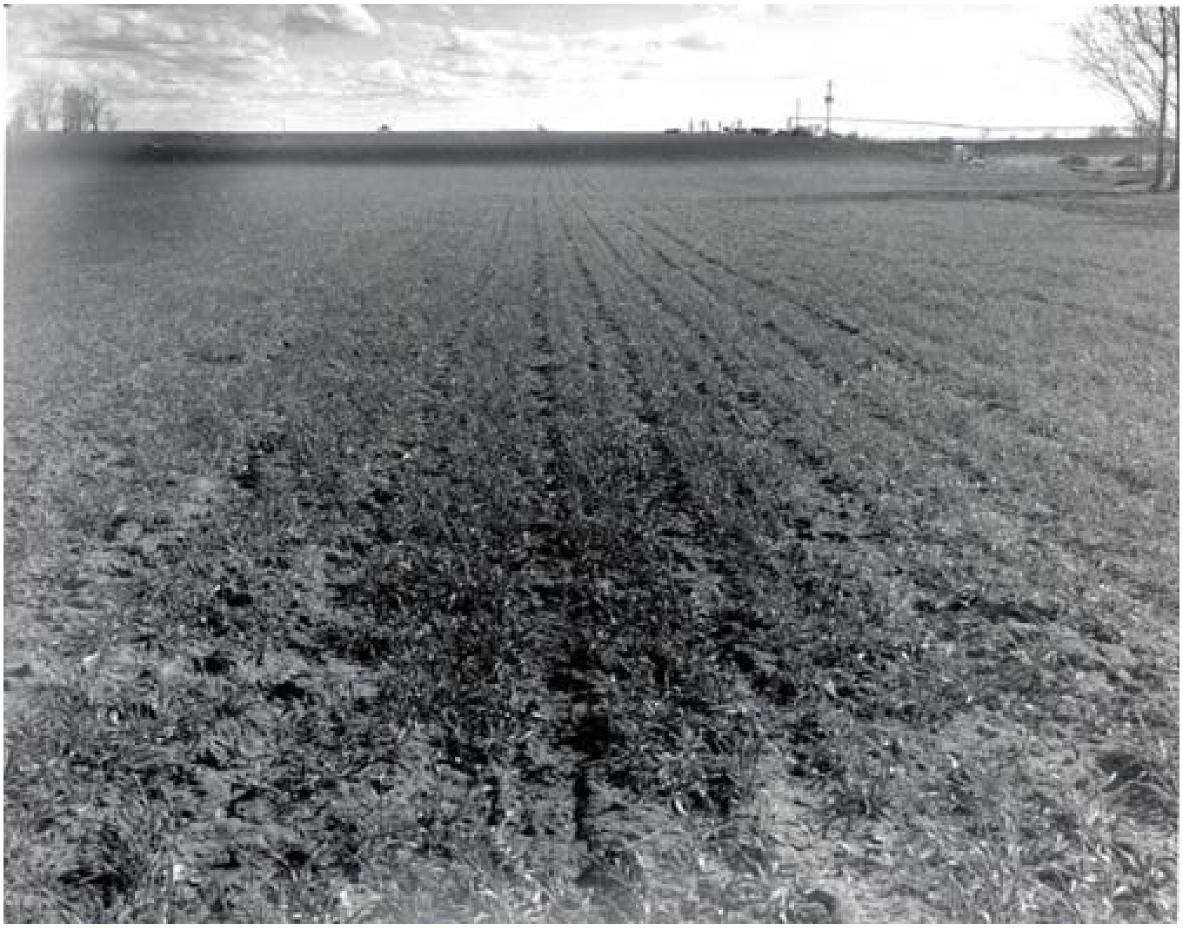


Figure 9.—Irrigated pasture in an area of Bahem very fine sandy loam, 0 to 4 percent slopes.

Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of erosion: By water—very severe; by wind—moderate

Characteristics of the Ephrata Soil

Position on landscape: Strongly sloping areas on stream terraces
Typical profile:
0 to 5 inches—yellowish brown fine sandy loam
5 to 26 inches—yellowish brown and light yellowish brown fine sandy loam
26 to 61 inches—multicolored very gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid to a depth of 26 inches and very rapid below this depth
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Sand and gravel at a depth of 26 inches
Runoff: Rapid
Hazard of erosion: By water—severe; by wind—moderate

Contrasting Inclusions

• Kudlac silt loam on escarpments (10 percent)
• Anchustequi loam in depressions and drainageways (5 percent)
• Jansite and Springcove silt loams in gently sloping positions (5 percent)
• Kecko fine sandy loam in concave positions (5 percent)

Use and Management

Major uses: Pasture and hayland
Major management factors: Hazards of wind and water erosion, low available water capacity, moderately rapid over very rapid permeability, and slope

Hayland and Pasture

Commonly grown crops: Irrigated pasture and hayland
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity and the moderately rapid over very rapid permeability of the Ephrata soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Sprinkler irrigation is the only suitable method of applying water. Areas that have slopes of more than 20 percent are not suitable for irrigation.

Interpretive Groups

Capability classification: IIIe, irrigated

16—Bahem-Kudlac complex, 8 to 25 percent slopes

Composition

Bahem very fine sandy loam and similar inclusions—45 percent
Kudlac silt loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Bahem Soil

Position on landscape: Toeslopes and concave areas on basalt plains
Typical profile:
0 to 11 inches—brown and pale brown very fine sandy loam
11 to 41 inches—very pale brown silt loam and very fine sandy loam
41 to 60 inches—very pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of erosion: By water—very severe; by wind—moderate

Characteristics of the Kudlac Soil

Position on landscape: Convex, sloping areas on lacustrine terraces
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 12 inches—pale brown silt loam
12 to 18 inches—light gray silt loam
18 to 23 inches—very pale brown silty clay loam
23 to 29 inches—pale brown silt loam
29 to 60 inches—very pale brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified lacustrine sediment at a depth of 29 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Fathom loamy sand in concave positions and on toeslopes (10 percent)
• Springcove silt loam in gently sloping areas (5 percent)

Use and Management

Major uses: Pasture and hayland
Major management factors: Hazards of wind and water erosion and very slow permeability

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very slow permeability of the Kudlac soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

17—Bailing-Darrah-Rock outcrop complex, 1 to 8 percent slopes

Composition

Bailing silt loam and similar inclusions—40 percent
Darrah silt loam and similar inclusions—30 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,250 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 85 days

Characteristics of the Bailing Soil

Position on landscape: Intermound areas and side slopes on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 22 inches—brown silty clay
22 to 39 inches—pale brown and very pale brown silty clay and silty clay loam
39 to 60 inches—pinkish white cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 25 to 40 inches
Restriction to rooting depth: Cemented hardpan at a depth of 39 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Darrah Soil

Position on landscape: Drainageways and areas where runoff accumulates on basalt plains
Typical profile:
0 to 11 inches—brown silt loam
11 to 27 inches—brown and pale brown silty clay loam
27 to 34 inches—yellowish brown silty clay loam
34 to 60 inches—light yellowish brown silty clay
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Convex areas

Contrasting Inclusions

• Nammoth extremely stony silt loam on ridges (10 percent)
• Hamrub silt loam on mounds (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, Rock outcrop, and very slow and slow permeability

Rangeland

Dominant vegetation in potential natural plant community: Threetip sagebrush, bluebunch wheatgrass, and Thurber needlegrass
Major management considerations:
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to avoid soil compaction and to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Bailing soil—010AY034ID Claypan 11-13 ARTR4/PSSP6-ACTH7; Darrah soil—010AY035ID Loamy Basin 11-13 ARTR4/PSSP6

18—Bailing-Hamrub-Darrah complex, 1 to 4 percent slopes

Composition

Bailing silt loam and similar inclusions—40 percent
Hamrub silt loam and similar inclusions—25 percent
Darrah silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 85 days

Characteristics of the Bailing Soil

Position on landscape: Intermound areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 22 inches—brown silty clay
22 to 39 inches—pale brown and very pale brown silty clay and silty clay loam
39 to 60 inches—pinkish white cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 25 to 40 inches
Restriction to rooting depth: Cemented hardpan at a depth of 39 inches
Runoff: Medium
Hazard of water erosion: Moderate

Characteristics of the Hamrub Soil

Position on landscape: Mound areas on basalt plains
Typical profile:
0 to 10 inches—brown silt loam
10 to 19 inches—brown silt loam
19 to 28 inches—dark brown silty clay loam
28 to 37 inches—light yellowish brown silty clay loam
37 to 50 inches—very pale brown loam
50 to 52 inches—very pale brown, lime- and silica-cemented hardpan
52 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 50 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 50 inches
Runoff: Slow

Characteristics of the Darrah Soil

Position on landscape: Drainageways and areas where runoff accumulates on basalt plains
Typical profile:
0 to 11 inches—brown silt loam
11 to 27 inches—brown and pale brown silty clay loam
27 to 34 inches—yellowish brown silty clay loam
34 to 60 inches—light yellowish brown silty clay
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

• Nammoth extremely stony silt loam in convex positions and on ridges (10 percent)
• Rock outcrop on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and very slow and slow permeability

Rangeland

Dominant vegetation in potential natural plant communities: Bailing and Darrah soils—threetip sagebrush and bluebunch wheatgrass; Hamrub soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very slow and slow permeability of the subsoil in the Bailing and Darrah soils causes saturation of the surface layer in spring. Livestock grazing should be deferred during this period to avoid soil compaction and to minimize the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Bailing soil.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Bailing soil—010AY034ID Claypan 11-13 ARTR4/PSSP6-ACTH7; Hamrub soil—010AY022ID Loamy 12-16 ARTRT/PSSP6; Darrah soil—010AY035ID Loamy Basin 11-13 ARTR4/PSSP6

19—Besslen gravelly loam, 1 to 4 percent slopes

Composition

Besslen gravelly loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,500 feet

Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Besslen Soil

Position on landscape: Eroded ridges on basalt buttes
Typical profile:
0 to 6 inches—pale brown gravelly loam
6 to 13 inches—very pale brown loam
13 to 16 inches—very pale brown gravelly loam
16 to 38 inches—light gray, lime- and silica-cemented hardpan
38 inches—unweathered lime- and silica-coated basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 16 inches
Runoff: Slow

Contrasting Inclusions

• Taunton and Idow loams on side slopes (15 percent)
• Purdam and Power silt loams in concave positions (5 percent)

Use and Management

Major uses: Cropland, hayland, and pasture
Major management factors: Depth to bedrock and to a hardpan, very low available water capacity, and carbonate-induced nutrient deficiencies

Cropland

Commonly grown crops: Irrigated wheat and barley
Major management considerations:
• This soil is poorly suited to use as cropland because of the very low available water capacity, limited rooting depth, and very low fertility. Deficiencies of phosphorus, iron, and zinc are common because of the high content of calcium carbonate. In addition to standard fertilizers, this soil responds to applications of amendments such as manure, elemental sulfur, chelated iron and zinc, and banded phosphorus.
• Suitable management practices are needed to overcome the very low available water capacity and the carbonate-induced nutrient deficiencies.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and bedrock.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the very low available water capacity and the carbonate-induced nutrient deficiencies.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and bedrock.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

20—Bray-Blisshill complex, 1 to 8 percent slopes

Composition

Bray silt loam and similar inclusions—55 percent
Blisshill extremely stony silty clay loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 5,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Bray Soil

Position on landscape: Slightly convex areas and drainageways on basalt plateaus and mesas
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 12 inches—pale brown silty clay loam
12 to 21 inches—yellowish brown clay
21 to 30 inches—reddish brown clay
30 to 61 inches—yellowish brown silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 29 to 40 inches

Restriction to rooting depth: Cemented hardpan at a depth of 30 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Blisshill Soil

Position on landscape: Concave areas and drainageways on basalt plateaus and mesas
Typical profile:
0 to 2 inches—dark grayish brown extremely stony silty clay loam
2 to 5 inches—dark brown silty clay
5 to 23 inches—dark yellowish brown clay
23 to 34 inches—yellowish brown clay
34 to 42 inches—reddish yellow weakly cemented loam
42 to 60 inches—brown silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 42 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to the Bray soil but have a very cobbly silt loam surface layer and are in convex positions (10 percent)
• Rubbleland in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Surface stones, very slow and slow permeablity, and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the stones on the Blisshill soil.
• The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Bray and Blisshill soils—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

21—Bruncan silt loam, 1 to 4 percent slopes

Composition

Bruncan silt loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Bruncan Soil

Position on landscape: Convex areas on buttes and basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 14 inches—yellowish brown silt loam
14 to 18 inches—very pale brown very cobbly silt loam
18 to 37 inches—lime- and silica-cemented hardpan
37 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 11 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 18 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

• Elijah and McPan silt loam on side slopes (10 percent)
• Power silt loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, hayland, and pastureland
Major management factors: Hazard of erosion and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, and sugar beets

Major management considerations:
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and bedrock.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

22—Burch loam, 0 to 2 percent slopes

Composition

Burch loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,950 to 4,750 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Burch Soil

Position on landscape: Nearly level stream bottoms on foothills
Typical profile:
0 to 23 inches—dark grayish brown loam
23 to 35 inches—dark brown loam
35 to 43 inches—brown very fine sandy loam
43 to 60 inches—brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Medium
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

• Dryck very fine sandy loam near the confluences of small streams (10 percent)
• Soils that are similar to the Burch soil but have a high water table, are frequently flooded, and are adjacent to stream channels (10 percent)

Use and Management

Major use: Rangeland
Major management factors: None, except the risk of stream erosion

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, basin wildrye, and bluebunch wheatgrass

Interpretive Groups

Capability classification: VIc, nonirrigated
Range site: 011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

23—Burch-Dryck complex, 0 to 2 percent slopes

Composition

Burch fine sandy loam and similar inclusions—50 percent
Dryck loamy fine sand and similar inclusions—35 percent
Contrasting inclusion—15 percent

Setting

Elevation: 3,900 to 4,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Burch Soil

Position on landscape: Stream terraces
Typical profile:
0 to 2 inches—grayish brown fine sandy loam
2 to 6 inches—brown fine sandy loam
6 to 16 inches—dark yellowish brown and brown loam
16 to 46 inches—yellowish brown and light brownish gray fine sandy loam
46 to 57 inches—light gray and gray very gravelly loamy sand and sand

57 to 60 inches—light gray and light brownish gray fine sandy loam

Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Moderate

Characteristics of the Dryck Soil

Position on landscape: Stream terraces
Typical profile:

0 to 2 inches—dark grayish brown loamy fine sand
2 to 9 inches—brown loamy sand
9 to 29 inches—dark yellowish brown and yellowish brown loamy fine sand
29 to 32 inches—yellowish brown very gravelly loamy sand
32 to 54 inches—grayish brown and gray extremely gravelly sand and sand
54 to 63 inches—light gray and gray extremely gravelly sand

Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderate or moderately rapid to a depth of 29 inches and very rapid below this depth
Available water capacity: Very low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified sand and gravel at a depth of 29 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Soils that are similar to Vining loamy fine sand and Banbury fine sandy loam but have a dark-colored surface layer and are in convex positions (10 percent)
- Small areas of Rock outcrop in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of wind erosion, very low available water capacity, and rare flooding

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread

Major management considerations:

- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of wind erosion.
- The very low available water capacity limits the selection of species suitable for seeding.
- Seeding should be delayed until late in spring or until fall to minimize the risk of flooding.

Interpretive Groups

Capability classification: VIc, nonirrigated
Range site: Burch and Dryck soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

24—Burch-Quencheroo-Dryck complex, 0 to 2 percent slopes

Composition

Burch loam and similar inclusions—45 percent
Quencheroo loam and similar inclusions—30 percent
Dryck very fine sandy loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Burch Soil

Position on landscape: Smooth, slightly concave areas on stream terraces
Typical profile:

0 to 13 inches—brown loam
13 to 21 inches—pale brown silt loam
21 to 60 inches—pale brown very fine sandy loam

Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow

Characteristics of the Quencheroo Soil

Position on landscape: Smooth, slightly elevated areas on stream terraces
Typical profile:

0 to 8 inches—grayish brown loam
8 to 27 inches—brown loam

27 to 56 inches—brown silt loam
56 inches—lime- and silica-coated basalt

Depth class: Deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: Moderate
Hazard of water erosion: None or slight
Potential rooting depth: 40 to 60 inches
Runoff: Very slow

Characteristics of the Dryck Soil

Position on landscape: Smooth, low areas on stream terraces
Typical profile:
0 to 3 inches—brown very fine sandy loam
3 to 8 inches—brown very fine sandy loam
8 to 11 inches—brown very fine sandy loam
11 to 23 inches—brown very fine sandy loam
23 to 28 inches—brown fine sand
28 to 60 inches—multicolored sand and gravel

Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderate or moderately rapid to a depth of 23 inches and very rapid below
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Sand and gravel at a depth of 28 inches
Runoff: Slow

Contrasting Inclusions

• Soils that are similar to the Quencheroo soil but have bedrock at a depth of less than 40 inches (5 percent)
• Soils immediately adjacent to streams and rivers that are similar to the Burch, Quencheroo, and Dryck soils but are wet (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIc, irrigated

25—Burwill-Rock outcrop-Connet complex, 12 to 60 percent slopes

Composition

Burwill very channery loam and similar inclusions—50 percent
Rock outcrop—20 percent
Connet very gravelly loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,000 to 5,200 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 46 degrees F
Frost free period: About 85 days

Characteristics of the Burwill Soil

Position on landscape: Concave areas on canyonsides in foothills
Typical profile:
0 to 15 inches—brown very channery loam
15 to 44 inches—yellowish brown extremely gravelly loam
44 inches—highly fractured, welded tuff

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Rock Outcrop

Kind of rock: Vertical hoodoos of “City of the Rocks” welded tuff (fig. 10)
Position on landscape: Convex areas on canyonsides

Figure 10.—Area of the "City of the Rocks" in an area of Burwill-Rock outcrop-Connet complex, 12 to 60 percent slopes, north of Gooding.

Characteristics of the Connet Soil

Position on landscape: Structural benches and convex areas on foothills
Slope: 12 to 30 percent
Typical profile:
0 to 2 inches—brown very gravelly loam
2 to 8 inches—yellowish brown very gravelly loam
8 to 13 inches—yellowish brown extremely gravelly loam
13 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Rubbleland near areas of Rock outcrop (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, hazard of water erosion, shallow depth to bedrock, very low available water capacity, and steep slopes

Rangeland

Dominant vegetation in potential natural plant community: Burwill soil—xericensis big sagebrush and bluebunch wheatgrass; Connet soil—low sagebrush and bluebunch wheatgrass

Major management considerations:

• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes of the Burwill soil, the shallow depth to bedrock in the Connet soil, and the areas of Rock outcrop.

• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

• The very low available water capacity of the Connet soil limits the selection of species suitable for seeding.

• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Connet soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIIe, nonirrigated

Range site: Burwill soil—010AY030ID South Slope Channery 11-13 ARTRX/PSSP6; Connet soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

26—Catchell silt loam, 3 to 6 percent slopes

Composition

Catchell silt loam and similar inclusions—80 percent

Contrasting inclusions—20 percent

Setting

Elevation: 3,500 to 4,200 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 49 degrees F

Frost-free season: About 110 days

Characteristics of the Catchell Soil

Position on landscape: Convex, smooth areas on basalt plains

Typical profile:

0 to 3 inches—light brownish gray silt loam

3 to 17 inches—brown clay

17 to 27 inches—pale brown clay

27 to 31 inches—pale brown loam

31 to 32 inches—white, lime- and silica-cemented hardpan

32 inches—basalt

Depth class: Moderately deep to a hardpan

Drainage class: Well drained

Permeability: Very slow

Available water capacity: Low

Potential rooting depth: 20 to 38 inches

Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches

Runoff: Slow or medium

Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Gooding silt loam in concave positions (5 percent)

• Rock outcrop on ridges (5 percent)

• Bruncan stony loam in convex positions and on south-facing slopes (5 percent)

• Elijah silt loam in areas similar to those of the Catchell soil (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland

Major management factors: Hazard of water erosion, very slow permeability, and depth to bedrock and to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn

Major management considerations:

• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan.

• Irrigation water should be applied slowly to compensate for the very slow permeability.

• Suitable management practices are needed to overcome the hazard of water erosion.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:

• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan.

• Irrigation water should be applied slowly to compensate for the very slow permeability.

• Suitable management practices are needed to overcome the hazard of water erosion.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

27—Catchell-Gooding complex, 2 to 6 percent slopes

Composition

Catchell very stony silt loam and similar inclusions—50 percent
Gooding silt loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,600 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Catchell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 2 inches—brown very stony silt loam (stones have been removed mechanically in cropland areas)
2 to 6 inches—pale brown very stony silt loam
6 to 19 inches—light yellowish brown silty clay loam
19 to 21 inches—light brown silty clay loam
21 to 26 inches—pink silty clay loam
26 to 30 inches—lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Rubbleland in convex positions (10 percent)
- Bruncan silt loam in convex positions (5 percent)
- Power silt loam in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of water erosion, rock fragments in the surface layer, very slow permeability, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Catchell soil.
- Rock fragments in the surface layer of the Catchell soil need to be removed.
- Irrigation water should be applied slowly to compensate for the very slow permeability of the soils.
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Catchell soil.
- Rock fragments in the surface layer of the Catchell soil may need to be removed in areas of hayland.
- Irrigation water should be applied slowly to compensate for the very slow permeability of the soils.
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the rock fragments in the surface layer of the Catchell soil.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of erosion.
• Installation of stock water pipelines is limited by the depth to the hardpan and to bedrock in the Catchell soil.

Interpretive Groups

Capability classification: VIe, irrigated and nonirrigated
Range site: Catchell soil—011BY003ID Stony Loam 8-12 ARTRW8/PSSP6; Gooding soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6

28—Catchell-Gooding complex, 6 to 20 percent slopes

Composition

Catchell very stony silt loam and similar inclusions—40 percent
Gooding silt loam and similar inclusions—40 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,600 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Catchell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 2 inches—brown very stony silt loam (stones have been removed mechanically in cropland areas)
2 to 6 inches—pale brown silt loam
6 to 19 inches—light yellowish brown silty clay loam
19 to 21 inches—light brown silty clay loam
21 to 26 inches—pink silty clay loam
26 to 30 inches—lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Rubbleland in convex positions (10 percent)
- Power silt loam in concave positions (5 percent)
- Bruncan silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of water erosion, very slow permeability, and depth to bedrock and to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Catchell soil.

• Irrigation water should be applied slowly to compensate for the very slow permeability of the soils.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Catchell soil.
• Irrigation water should be applied slowly to compensate for the very slow permeability of the soils.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of erosion.
• Seeding, mechanical treatment, and distribution of livestock are limited by the rock fragments in the surface layer of the Catchell soil.

Interpretive Groups

Capability classification: VIe, irrigated and nonirrigated
Range site: Catchell soil—011BY003ID Stony Loam 8-12 ARTRW8/PSSP6; Gooding soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6

29—Catchell-Paulville complex, 2 to 10 percent slopes

Composition

Catchell loam and similar inclusions—40 percent
Paulville loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Setting

Elevation: 3,400 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Catchell Soil

Position on landscape: Convex tops and gently sloping convex side slopes on basalt plains
Typical profile:
0 to 2 inches—brown loam
2 to 9 inches—yellowish brown and pale brown loam
9 to 21 inches—yellowish brown clay
21 to 25 inches—very pale brown silty clay loam
25 to 33 inches—white silt loam
33 to 34 inches—white, lime- and silica-cemented hardpan
34 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 33 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Paulville Soil

Position on landscape: Drainageways on basalt plains
Slope: 2 to 4 percent
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 33 inches—very pale brown silt loam
33 to 50 inches—light gray and pale brown loam and silt loam
50 to 60 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of water erosion: Slight

Contrasting Inclusions

• Banbury loam on ridgetops and in eroded areas (10 percent)
• McPan silt loam on convex side slopes (10 percent)

• Snowmore fine sandy loam on broad ridgetops (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Catchell soil.
• The low available water capacity of the Catchell soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Catchell soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6; Paulville soil—011AY009ID Loamy 8-12 ARTRW8/PSSP6

30—Catchell-Rock outcrop complex, 8 to 30 percent slopes

Composition

Catchell very stony silt loam and similar inclusions—45 percent
Rock outcrop—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,550 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Catchell Soil

Position on landscape: Fault scarps on basalt plateaus
Typical profile:
0 to 2 inches—light gray very stony silt loam
2 to 3 inches—pale brown very stony silt loam
3 to 18 inches—yellowish brown silty clay
18 to 22 inches—yellowish brown silty clay loam
22 to 36 inches—very pale brown, lime- and silica-cemented hardpan
36 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Rock Outcrop

Kind of rock: Basalt
Position on landscape: Ridges on fault scarps

Contrasting Inclusions

• Gooding silt loam on toeslopes (5 percent)
• McHandy stony silty clay loam on canyonsides (5 percent)
• Hobby extremely stony silty clay loam on canyonsides (5 percent)
• Fluvaquents in wet meadows in canyons (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, hazard of water erosion, stones in the surface layer, low available water capacity, and very slow permeability

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding and mechanical treatment are limited by the areas of Rock outcrop and the stones in the surface layer.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The low available water capacity limits the selection of species suitable for seeding.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Catchell soil—011BY003ID Stony Loam 8-12 ARTRW8/PSSP6

31—Chijer loamy fine sand, 1 to 4 percent slopes

Composition

Chijer loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Chijer Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 6 inches—brown loamy fine sand
6 to 17 inches—yellowish brown loamy fine sand
17 to 29 inches—pale brown fine sandy loam
29 to 43 inches—very pale brown silt loam
43 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 43 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Taunton and Ticeska loamy fine sands in convex positions (15 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factor: Hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, sugar beets, potatoes, and corn
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include corrugation, furrow, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include corrugation, furrow, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

32—Chijer very fine sandy loam, 0 to 2 percent slopes

Composition

Chijer very fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Chijer Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 10 inches—brown and pale brown very fine sandy loam
10 to 15 inches—pale brown silt loam
15 to 51 inches—pale brown and very pale brown very fine sandy loam
51 to 55 inches—very pale brown sandy loam
55 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 55 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Taunton very fine sandy loam in convex positions (8 percent)

• Ticeska very fine sandy loam in concave positions (7 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and beans
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIe, irrigated

33—Chijer-Lobeisner complex, 1 to 6 percent slopes

Composition

Chijer silt loam and similar inclusions—60 percent
Lobeisner silt loam and similar inclusions—30 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,200 to 4,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Chijer Soil

Position on landscape: Convex areas and side slopes on buttes
Slope: 2 to 6 percent
Typical profile:
0 to 4 inches—brown silt loam
4 to 10 inches—brown silt loam
10 to 15 inches—light gray silt loam
15 to 29 inches—very pale brown silt loam
29 to 40 inches—light yellowish brown silt loam
40 to 43 inches—yellowish brown loam
43 to 65 inches—light yellowish brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 43 inches
Runoff: Medium
Hazard of water erosion: Slight or moderate

Characteristics of the Lobeisner Soil

Position on landscape: Toeslopes and drainageways on buttes
Slope: 1 to 3 percent
Typical profile:
0 to 5 inches—brown silt loam
5 to 17 inches—yellowish brown silt loam
17 to 45 inches—pale brown and very pale brown silt loam
45 to 58 inches—yellowish brown loam
58 to 68 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Medium

Contrasting Inclusions

• Ticeska silt loam in convex positions (5 percent)
• Kinzie silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factor: Hazard of water erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, and corn for silage

Major management considerations:
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

34—Chilcott-Catchell-Power complex, 1 to 6 percent slopes

Composition

Chilcott silt loam and similar inclusions—45 percent
Catchell silt loam and similar inclusions—25 percent
Power silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Chilcott Soil

Position on landscape: Intermounds on basalt plateaus
Typical profile:
0 to 2 inches—light brownish gray silt loam
2 to 6 inches—pale brown silt loam
6 to 24 inches—brown and yellowish brown silty clay
24 to 27 inches—yellowish brown silty clay loam
27 to 32 inches—light yellowish brown clay loam
32 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Catchell Soil

Position on landscape: Intermounds on basalt plateaus
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 6 inches—pale brown silt loam
6 to 25 inches—brown silty clay
25 to 28 inches—light yellowish brown silty clay loam
28 to 31 inches—light yellowish brown loam
31 to 36 inches—very pale brown, lime- and silica-cemented hardpan
36 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe

Characteristics of the Power Soil

Position on landscape: Mounds on basalt plateaus
Slope: 1 to 3 percent
Typical profile:
0 to 3 inches—light brownish gray silt loam
3 to 11 inches—brown silt loam
11 to 37 inches—brown silty clay loam
37 to 64 inches—pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

• McHandy silty clay loam in circular areas in intermound positions (10 percent)
• Soils that are similar to the Chilcott soil but have an extremely stony silt loam surface layer and are in broad drainageways (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very slow and slow permeability, low available water capacity, and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very slow and slow permeability of the subsoil in the Chilcott and Catchell soils results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Chilcott and Catchell soils.
• The low available water capacity of the Chilcott and Catchell soils limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Chilcott and Catchell soils—011AY005ID Claypan 8-12 ARTRW8/PSSP6; Power soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

35—Chilcott-Linkletter complex, 2 to 25 percent slopes

Composition

Chilcott loam and similar inclusions—45 percent
Linkletter gravelly loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,900 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Chilcott Soil

Position on landscape: Smooth and convex areas on rounded hills
Slope: 2 to 10 percent
Typical profile:
0 to 5 inches—brown and dark yellowish brown loam
5 to 10 inches—yellowish brown silty clay loam
10 to 18 inches—yellowish brown silty clay
18 to 23 inches—yellowish brown silty clay loam
23 to 33 inches—very pale brown loam
33 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Medium
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 33 inches
Runoff: Medium to very rapid
Hazard of water erosion: Moderate to very severe

Characteristics of the Linkletter Soil

Position on landscape: Side slopes of terraces and rounded hills
Slope: 8 to 25 percent
Typical profile:
0 to 3 inches—pale brown gravelly loam
3 to 16 inches—brown loam
16 to 31 inches—brown clay loam
31 to 40 inches—brown cobbly sandy clay loam
40 to 55 inches—reddish yellow gravelly sandy loam
55 to 67 inches—lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 55 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

• Soils that are similar to the Linkletter soil but are on mounds in drainageways and have slopes of 0 to 3 percent (10 percent)
• Power and Elijah silt loams in areas influenced by silty alluvium (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Slow permeability and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass

Major management considerations:
• The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of erosion.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Chilcott soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6; Linkletter soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

36—Connet-Burwill-Rock outcrop complex, 2 to 12 percent slopes

Composition

Connet very gravelly loam and similar inclusions—50 percent
Burwill very channery loam and similar inclusions—20 percent
Rock outcrop—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,000 to 5,200 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 46 degrees F
Frost-free period: About 85 days

Characteristics of the Connet Soil

Position on landscape: Convex areas on structural benches on foothills
Typical profile:
0 to 2 inches—brown very gravelly loam
2 to 8 inches—yellowish brown very gravelly loam
8 to 13 inches—yellowish brown extremely gravelly loam
13 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Burwill Soil

Position on landscape: Concave areas on side slopes of foothills directly below structural benches on foothills
Typical profile:
0 to 15 inches—brown very channery loam
15 to 44 inches—yellowish brown extremely gravelly loam
44 inches—highly fractured, welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Rock Outcrop

Kind of rock: Vertical hoodoos of “City of the Rocks” welded tuff
Position on landscape: Convex side slopes and nearly level eroded areas on structural benches

Contrasting Inclusions

• Rubbleland near areas of Rock outcrop (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, hazard of water erosion, shallow depth to bedrock, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Connet soil—low sagebrush and bluebunch wheatgrass; Burwill soil—xericensis big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the shallow depth to bedrock in the Connet soil and by the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low available water capacity of the Connet soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Connet soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Connet soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6; Burwill soil—010AY030ID South Slope Channery 11-13 ARTRX/PSSP6

37—Cox-Rehfield-Rock outcrop complex, 2 to 15 percent slopes

Composition

Cox very stony sandy loam and similar inclusions—35 percent
Rehfield loamy sand and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,300 to 4,700 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 95 days

Characteristics of the Cox Soil

Position on landscape: Convex tops and side slopes on basalt plains
Typical profile:
0 to 4 inches—brown very stony sandy loam
4 to 12 inches—brown and dark yellowish brown very stony sandy loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium

Characteristics of the Rehfield Soil

Position on landscape: Depressions in basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 10 inches—brown loamy sand
10 to 18 inches—yellowish brown loam
18 to 25 inches—light yellowish brown loam
25 to 60 inches—pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow or very slow
Hazard of wind erosion: Severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Pressure ridges and side slopes on basalt plains

Contrasting Inclusions

- Soils that are similar to the Rehfield soil but are 20 to 40 inches thick and are on side slopes (10 percent)
- Pagari very cobbly sandy loam on convex side slopes (5 percent)

Contrasting Inclusions

Major use: Rangeland
Major management factors: Hazard of wind erosion, Rock outcrop, very low available water capacity, and depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Cox soil—basin big sagebrush and bluebunch wheatgrass; Rehfield soil—basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of wind erosion.
- The very low available water capacity of the Cox soil limits the selection of species suitable for seeding.
- Seeding and mechanical treatment are limited by the areas of Rock outcrop.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Cox soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Cox soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6; Rehfield soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

38—Darrah silt loam, 0 to 3 percent slopes

Composition

Darrah loam and similar inclusions—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,250 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Darrah Soil

Position on landscape: Closed basins on basalt plains

Typical profile:
0 to 11 inches—pale brown and brown silt loam
11 to 27 inches—brown and pale brown silty clay loam
27 to 34 inches—yellowish brown silty clay loam
34 to 60 inches—light yellowish brown silty clay

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Bailing silt loam in convex areas and intermound areas (5 percent)
• Hamrub silt loam on mounds (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and slow permeability

Rangeland

Dominant vegetation in potential natural plant community: Threetip sagebrush and bluebunch wheatgrass
Major management considerations:
• The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIc, nonirrigated
Range site: 010AY035ID Loamy Basin 11-13 ARTR4/PSSP6

39—Darrah-Perla-Nammoth complex, 2 to 12 percent slopes

Composition

Darrah silt loam and similar inclusions—40 percent
Perla silt loam and similar inclusions—25 percent
Nammoth extremely stony silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,400 to 4,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Darrah Soil

Position on landscape: Toeslopes and concave areas on basalt buttes
Slope: 2 to 8 percent
Parent material: Young loess over weathered loess
Typical profile:
0 to 11 inches—brown silt loam
11 to 27 inches—brown and pale brown silty clay loam
27 to 34 inches—yellowish brown silty clay loam
34 to 60 inches—light yellowish brown silty clay

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Medium to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Perla Soil

Position on landscape: Convex areas on basalt buttes
Slope: 2 to 8 percent
Typical profile:
0 to 10 inches—grayish brown and brown silt loam
10 to 24 inches—dark brown and pale brown silty clay loam
24 to 29 inches—brown silty clay
29 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Nammoth Soil

Position on landscape: Ridges on basalt buttes
Slope: 4 to 12 percent
Typical profile:
0 to 10 inches—brown extremely stony silt loam
10 to 25 inches—brown very stony clay loam
25 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow

Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Bailing silt loam in convex positions (10 percent)
- Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, stones in the surface layer, slowly permeable subsoil, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Perla and Nammoth soils—xericensis big sagebrush and bluebunch wheatgrass; Darrah soil—threetip sagebrush and bluebunch wheatgrass
Major management considerations:
- The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- Seeding and mechanical treatment are limited by the stones in the surface layer of the Nammoth soil.
- The low available water capacity of the Nammoth soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Darrah soil—010AY035ID Loamy Basin 11-13 ARTR4/PSSP6; Perla soil—010AY033ID Loamy 11-13 ARTRX/PSSP6; Nammoth soil—010AY032ID Bouldery 11-13 ARTRX/PSSP6

40—Deerhorn-Rehfield-Rock outcrop complex, 2 to 15 percent slopes

Composition

Deerhorn fine sandy loam and similar inclusions—40 percent
Rehfield sandy loam and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Deerhorn Soil

Position on landscape: Convex tops and side slopes of basalt plains
Typical profile:
0 to 8 inches—dark grayish brown and brown fine sandy loam
8 to 15 inches—brown loam
15 to 21 inches—yellowish brown loam
21 to 28 inches—white, lime- and silica-cemented hardpan
28 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Rehfield Soil

Position on landscape: Depressions and drainageways in basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 10 inches—brown sandy loam
10 to 18 inches—yellowish brown loam
18 to 25 inches—light yellowish brown loam
25 to 60 inches—pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Pressure ridges and side slopes of basalt plains

Contrasting Inclusions

- Playas in areas where runoff accumulates (5 percent)
- Wildors very stony sandy loam on convex ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Deerhorn and Rehfield soils—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
- The low available water capacity of the Deerhorn soil limits the selection of species suitable for seeding.
- Seeding and mechanical treatment are limited by the areas of Rock outcrop.
- Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Deerhorn and Rehfield soils—011AY009ID Loamy 8-12 ARTRT/PSSP6

41—Deerhorn-Wildors complex, 2 to 8 percent slopes

Composition

Deerhorn fine sandy loam and similar inclusions—45 percent
Wildors very stony sandy loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Deerhorn Soil

Position on landscape: Concave side slopes of basalt plains
Typical profile:
0 to 8 inches—dark grayish brown and brown fine sandy loam
8 to 15 inches—brown loam
15 to 21 inches—yellowish brown loam
21 to 28 inches—white, lime- and silica-cemented hardpan
28 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 30 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Wildors Soil

Position on landscape: Flat ridgetops and convex side slopes of basalt plains
Typical profile:
0 to 10 inches—brown very stony sandy loam
10 to 15 inches—yellowish brown very stony loam
15 to 18 inches—pale brown very stony loam
18 to 22 inches—very pale brown very stony sandy loam
22 to 24 inches—light gray, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 21 to 28 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Slow

Contrasting Inclusions

- Rehfield sandy loam in drainageways (10 percent)
- Rekima very stony sandy loam in convex positions (10 percent)
- Rock outcrop in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and very low and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion on the Deerhorn soil.
• The very low and low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Deerhorn soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Wildors soil—011AY011ID Stony Loam 10-12 ARTRT/PSSP6

42—Deerhorn-Wildors-Rekima complex, 2 to 15 percent slopes

Composition

Deerhorn fine sandy loam and similar inclusions—40 percent
Wildors very stony sandy loam and similar inclusions—30 percent
Rekima extremely stony loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Deerhorn Soil

Position on landscape: Side slopes of basalt buttes
Typical profile:
0 to 9 inches—dark grayish brown fine sandy loam
9 to 17 inches—brown sandy clay loam
17 to 21 inches—very pale brown loam
21 to 24 inches—very pale brown, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 30 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Wildors Soil

Position on landscape: Ridgetops on basalt buttes
Typical profile:
0 to 9 inches—brown and yellowish brown very stony sandy loam
9 to 21 inches—yellowish brown extremely stony loam
21 to 24 inches—very pale brown, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 21 to 28 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Characteristics of the Rekima Soil

Position on landscape: Eroded drainageways in buttes
Typical profile:
0 to 5 inches—brown extremely stony loam
5 to 14 inches—pale brown very stony loam
14 to 15 inches—very pale brown, lime- and silica-cemented hardpan
15 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 16 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 14 inches
Runoff: Very slow to rapid
Hazard of water erosion: None to moderate

Contrasting Inclusions

• Rock outcrop in convex positions (5 percent)
• Rehfield sandy loam in drainageways (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, depth to bedrock, and very low and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Deerhorn and Wildors soils—basin big sagebrush and bluebunch wheatgrass; Rekima soil—Wyoming big sagebrush and bluebunch wheatgrass

Major management considerations:

• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.

• The very low and low available water capacity limit the selection of species suitable for seeding.

• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Rekima soil.

Interpretive Groups

Capability classification: VIIs, nonirrigated

Range site: Deerhorn soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Wildors soil—011AY011ID Stony Loam 10-12 ARTRT/PSSP6; Rekima soil—011AY002ID Shallow Loamy 8-12 ARTRW8/PSSP6

43—Deter silt loam, 0 to 2 percent slopes

Composition

Deter silt loam and similar inclusions—85 percent

Contrasting inclusions—15 percent

Setting

Elevation: 3,000 to 4,000 feet

Average annual precipitation: About 9 inches

Average annual air temperature: About 50 degrees F

Frost-free season: About 115 days

Characteristics of the Deter Soil

Position on landscape: Nearly level stream terraces

Typical profile:

0 to 3 inches—grayish brown silt loam

3 to 22 inches—grayish brown silty clay loam

22 to 63 inches—brown, light yellowish brown, and yellowish brown silty clay loam and silty clay

Depth class: Very deep

Drainage class: Well drained

Frequency of flooding: Rare

Permeability: Slow

Available water capacity: High

Potential rooting depth: 60 inches or more

Runoff: Very slow or slow

Contrasting Inclusions

• Gooding silt loam on the edges of interfaces of stream terraces and basalt plains (10 percent)

• Soils that are near streams and rivers and are similar to the Deter soil but are wet (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland

Major management factor: Rare flooding

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn

Major management considerations:

• Irrigation water management is needed to overcome the slow permeability of the subsoil.

• Planting may have to be delayed in some years when flooding occurs.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIs, irrigated

44—Dryck-Loupence complex, 0 to 1 percent slopes

Composition

Dryck very fine sandy loam and similar inclusions—55 percent

Loupence silt loam and similar inclusions—35 percent

Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 4,100 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 49 degrees F

Frost-free period: About 110 days

Characteristics of the Dryck Soil

Position on landscape: Smooth, low areas on stream terraces

Typical profile:

0 to 8 inches—brown very fine sandy loam

8 to 11 inches—brown loam
11 to 23 inches—brown very fine sandy loam
23 to 28 inches—brown fine sand
28 to 60 inches—multicolored sand and gravel
Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderate or moderately rapid to a depth of 23 inches and very rapid below this depth
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Sand and gravel at a depth of 28 inches
Runoff: Slow

Characteristics of the Loupence Soil

Position on landscape: Smooth, slightly concave areas on stream terraces
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 19 inches—grayish brown silty clay loam
19 to 28 inches—grayish brown silt loam
28 to 42 inches—brown very fine sandy loam
42 to 67 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow

Contrasting Inclusions

• Soils that are near streams and are similar to the Dryck and Loupence soils but are wet (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIc, irrigated

45—Duguesclin-Starhope complex, 1 to 6 percent slopes

Composition

Duguesclin very cobbly clay loam and similar inclusions—50 percent
Starhope silt loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,100 to 5,900 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 80 days

Characteristics of the Duguesclin Soil

Position on landscape: Eroded drainageways and concave areas of basalt plains
Typical profile:
0 to 2 inches—yellowish brown very cobbly clay loam
2 to 11 inches—yellowish brown clay
11 to 22 inches—brown clay
22 to 33 inches—light brown clay loam
33 to 41 inches—pink silica-cemented hardpan
41 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 33 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Starhope Soil

Position on landscape: Smooth, convex areas on basalt plains
Typical profile:
0 to 9 inches—grayish brown and brown silt loam

9 to 17 inches—brown silty clay loam
17 to 25 inches—brown silty clay
25 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Polecreek very cobbly silt loam on ridges (5 percent)
• Mug extremely stony loam in convex positions (5 percent)
• Schooler extremely stony silty clay loam in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, very slow and slow permeability, and shrink-swell potential

Rangeland

Dominant vegetation in potential natural plant community: Duguesclin soil—low sagebrush and bluebunch wheatgrass; Starhope soil—mountain big sagebrush and Idaho fescue
Major management considerations:
• The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• The high shrink-swell potential of the Duguesclin soil limits the selection of species suitable for seeding.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: IVs, nonirrigated
Range site: Duguesclin soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6; Starhope soil—010AY004ID Loamy 12-16 ARTRV/FEID

46—Elijah-Bruncan complex, 1 to 4 percent slopes

Composition

Elijah silt loam and similar inclusions—55 percent
Bruncan silt loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Elijah Soil

Position on landscape: Concave areas and side slopes of basalt plains and buttes
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 18 inches—light yellowish brown silt loam
18 to 32 inches—very pale brown silt loam
32 to 53 inches—white, lime- and silica-cemented hardpan
53 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Medium
Hazard of erosion: By water—moderate; by wind—slight

Characteristics of the Bruncan Soil

Position on landscape: Ridges on basalt buttes and plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 14 inches—yellowish brown silt loam
14 to 18 inches—very pale brown very cobbly silt loam
18 to 37 inches—lime- and silica-cemented hardpan
37 inches—unweathered basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 11 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 18 inches
Runoff: Slow
Hazard of erosion: By water—slight; by wind—slight

Contrasting Inclusions

• Power silt loam in concave positions (10 percent)

• McPan silt loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of erosion and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• The Bruncan soil is poorly suited to use as cropland because of the shallow depth to the cemented pan and the susceptibility to erosion.
• Deep plowing of the soils should be avoided.
• Excavation for irrigation system mainlines and irrigation ditches is limited by the depth to the cemented pan and to bedrock.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

47—Elijah-Gooding complex, 0 to 3 percent slopes

Composition

Elijah silt loam and similar inclusions—50 percent
Gooding silt loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,600 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Elijah Soil

Position on landscape: Convex areas and side slopes of basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silty clay loam
10 to 15 inches—light yellowish brown silty clay loam
15 to 23 inches—yellowish brown silt loam
23 to 31 inches—very pale brown loam
31 to 45 inches—very pale brown, lime- and silica-cemented hardpan
45 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Rock outcrop on ridges (10 percent)
• Power silt loam in concave positions (5 percent)

• Catchell very stony silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion, very slow permeability, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Elijah soil.
• Suitable management practices are needed to overcome the hazard of water erosion on the Gooding soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Elijah soil.
• Suitable management practices are needed to overcome the hazard of water erosion on the Gooding soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

48—Elijah-McPan complex, 2 to 6 percent slopes

Composition

Elijah silt loam and similar inclusions—50 percent
McPan silt loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,550 to 4,250 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Elijah Soil

Position on landscape: Smooth and concave areas and side slopes of basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silty clay loam
10 to 15 inches—light yellowish brown silty clay loam
15 to 23 inches—yellowish brown silt loam
23 to 31 inches—very pale brown loam
31 to 45 inches—very pale brown, lime- and silica-cemented hardpan
45 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Medium
Hazard of water erosion: Slight

Characteristics of the McPan Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 10 inches—brown silty clay loam
10 to 20 inches—dark yellowish brown silty clay loam
20 to 27 inches—very pale brown cobbly loam
27 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 27 inches
Runoff: Medium
Hazard of water erosion: Moderate

Contrasting Inclusions

• Gooding silt loam on smooth side slopes (5 percent)
• Power silt loam in concave positions (5 percent)
• Catchell silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland

Major management factors: Hazard of water erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation system mainlines is limited by the depth to the cemented pan and by the depth to bedrock in the McPan soil.
• Irrigation water management is needed to overcome the low available water capacity of McPan soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation system mainlines is limited by the depth to the cemented pan and by the depth to bedrock in the McPan soil.
• Irrigation water management is needed to overcome the low available water capacity of the McPan soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

49—Elijah-Purdam complex, 0 to 12 percent slopes

Composition

Elijah silt loam and similar inclusions—60 percent
Purdam very fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 4,300 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Elijah Soil

Position on landscape: Slightly convex areas on basalt plateaus
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silty clay loam
10 to 15 inches—light yellowish brown silty clay loam
15 to 23 inches—yellowish brown silt loam
23 to 31 inches—very pale brown loam
31 to 45 inches—very pale brown, lime- and silica-cemented hardpan
45 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Very slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Purdam Soil

Position on landscape: Drainageways and slightly concave areas on basalt plateaus
Typical profile:
0 to 5 inches—light yellowish brown very fine sandy loam
5 to 9 inches—yellowish brown very fine sandy loam
9 to 16 inches—light yellowish brown silty clay loam
16 to 20 inches—light yellowish brown silt loam
20 to 38 inches—white silt loam
38 to 60 inches—pinkish gray, lime- and silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 21 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Very slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

• Power silt loam on mounds (10 percent)
• Soils that are similar to the Purdam soil but have a

stony silt loam surface layer and have slopes of more than 12 percent (5 percent)

Use and Management

Major use: Rangeland
Major management factor: Hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management consideration:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Elijah and Purdam soils—011AY004ID Loamy 8-12 ARTRW8/PSSP6

50—Elkcreek-Mulshoe complex, 1 to 8 percent slopes

Composition

Elkcreek loam and similar inclusions—45 percent
Mulshoe very stony loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 65 days

Characteristics of the Elkcreek Soil

Position on landscape: Elevated structural benches on foothills
Typical profile:
0 to 9 inches—dark brown loam
9 to 21 inches—brown clay loam
21 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Mulshoe Soil

Position on landscape: Elevated structural benches on foothills
Slope: 4 to 8 percent
Typical profile:
0 to 9 inches—dark grayish brown very stony loam
9 to 21 inches—yellowish brown very stony clay loam
21 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Slow

Contrasting Inclusions

• Soils that are similar to the Elkcreek and Mulshoe soils but are shallow to bedrock and are in convex positions (10 percent)
• Mulshoe extremely bouldery loam that is on short slopes of 12 to 20 percent on fault scarps (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Low and very low available water capacity, hazard of water erosion, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the stones in the surface layer of the Mulshoe soil.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Elkcreek soil.
• The low and very low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Elkcreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6; Mulshoe soil—010AY004ID Loamy 12-16 ARTRV/FEID

51—Elkcreek-Mulshoe-Simonton complex, 1 to 12 percent slopes

Composition

Elkcreek loam and similar inclusions—30 percent
Mulshoe extremely bouldery loam and similar inclusions—30 percent

Simonton loam and similar inclusions—30 percent
Contrasting inclusions—10 percent

Setting

Elevation: 5,000 to 6,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 65 days

Characteristics of the Elkcreek Soil

Position on landscape: Concave areas of foothills
Typical profile:
0 to 10 inches—grayish brown and brown loam
10 to 26 inches—brown clay loam
26 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Mulshoe Soil

Position on landscape: Convex areas of foothills
Typical profile:
0 to 10 inches—very dark grayish brown and dark brown extremely bouldery loam
10 to 38 inches—brown very stony clay loam
38 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very slow to medium
Hazard of water erosion: Slight or moderate

Characteristics of the Simonton Soil

Position on landscape: Closed basins on foothills
Slope: 1 to 3 percent
Typical profile:
0 to 14 inches—dark grayish brown and brown loam
14 to 22 inches—yellowish brown loam
22 to 42 inches—light brown clay loam
42 to 60 inches—pink loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Contrasting Inclusions

- Elkcreek loam that has slopes of 12 to 20 percent (5 percent)
- Rock outcrop in convex areas (3 percent)
- Soils that are similar to Gaibson very channery loam but are dark in the upper part, are underlain by welded tuff, and have slopes of 1 to 5 percent (2 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, boulders in the surface layer, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the boulders in the surface layer of the Mulshoe soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Elkcreek and Mulshoe soils.
- The low available water capacity of the Mulshoe soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVs, nonirrigated
Range site: Elkcreek and Simonton soils—010AY004ID Loamy 12-16 ARTRV/FEID; Mulshoe soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID

52—Elkcreek-Mulshoe-Simonton complex, 12 to 35 percent slopes

Composition

Elkcreek loam and similar inclusions—40 percent
Mulshoe extremely bouldery loam and similar inclusions—35 percent
Simonton loam and similar inclusions—20 percent
Contrasting inclusions—5 percent

Setting

Aspect: North and east
Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 65 days

Characteristics of the Elkcreek Soil

Position on landscape: Concave side slopes of foothills
Slope: 12 to 25 percent
Typical profile:
0 to 10 inches—dark grayish brown and brown loam
10 to 30 inches—pale brown and light yellowish brown clay loam
30 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Mulshoe Soil

Position on landscape: Convex areas on side slopes of foothills
Typical profile:
0 to 10 inches—very dark grayish brown and dark brown extremely bouldery loam
10 to 38 inches—brown very stony clay loam
38 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe

Characteristics of the Simonton Soil

Position on landscape: Concave side slopes of foothills
Slope: 12 to 30 percent
Typical profile:
0 to 7 inches—grayish brown loam
7 to 32 inches—brown and yellowish brown clay loam
32 to 44 inches—brown sandy clay loam
44 to 60 inches—light brown gravelly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Rock outcrop on convex side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, steep slopes, boulders in the surface layer, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and the boulders in the surface layer of the Mulshoe soil.
• The very low available water capacity of the Mulshoe soil limits the selection of species suitable for seeding.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Elkcreek and Simonton soils—010AY004ID Loamy 12-16 ARTRV/FEID; Mulshoe soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID

53—Ephrata fine sandy loam, 1 to 6 percent slopes

Composition

Ephrata fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,100 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Ephrata Soil

Position on landscape: Smooth areas on stream terraces
Typical profile:
0 to 5 inches—yellowish brown fine sandy loam
5 to 26 inches—yellowish brown and light yellowish brown fine sandy loam
26 to 61 inches—multicolored very gravelly loamy coarse sand

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid to a depth of 26 inches and very rapid below
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Sand and gravel at a depth of 26 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Tupper extremely bouldery fine sandy loam (5 percent)
• Tupper extremely stony fine sandy loam on the highest positions on stream terraces (5 percent)
• Kecko loamy fine sand in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to sand and gravel

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the surface layer.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the surface layer.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

54—Farmell-Power-Playas complex, 0 to 2 percent slopes

Composition

Farmell silt loam and similar inclusions—55 percent
Power silt loam and similar inclusions—20 percent
Playas—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Farmell Soil

Position on landscape: Areas adjacent to playas on basalt plains
Typical profile:
0 to 5 inches—pale brown silt loam
5 to 8 inches—pale brown silty clay loam
8 to 16 inches—light yellowish brown clay
16 to 36 inches—very pale brown silty clay
36 to 56 inches—very pale brown silty clay loam
56 to 80 inches—light yellowish brown silty clay
Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Characteristics of the Power Soil

Position on landscape: Higher lying areas that surround the Farmell soils on basalt plains
Typical profile:
0 to 2 inches—pale brown silt loam
2 to 8 inches—brown silt loam
8 to 18 inches—brown silty clay loam
18 to 52 inches—pale brown silt loam
52 to 60 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow

Characteristics of the Playas

Description of areas: Barren flats in the lowest areas of closed basins

Contrasting Inclusions

• Soils that are similar to the Farmell and Power soils but have a very stony loam surface (5 percent)
• Paulville loam and Power silt loam that have slopes of 2 to 4 percent (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Rare flooding and ponding and slow permeability

Rangeland

Dominant vegetation in potential natural plant community: Farmell soil—threetip sagebrush and bluebunch wheatgrass; Power soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding should be delayed until late in spring or until fall to minimize the risk of flooding.
• Most areas of Playas are filled with water during periods of spring runoff, and they provide a source of water for wildlife and livestock until late in spring or early in summer. When dry, the areas of Playas are subject to erosion.
• The slow permeability of the subsoil of the Farmell soil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of erosion.

Interpretive Groups

Capability classification: VIc, nonirrigated
Range site: Farmell soil—011BY008ID Playa 8-12 ARTR4/PSSP6; Power soil—011AY0091D Loamy 8-12 ARTRT/PSSP6

55—Fathom loamy fine sand, 1 to 4 percent slopes

Composition

Fathom loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Fathom Soil

Position on landscape: Sloping areas on stream terraces
Typical profile:
0 to 7 inches—brown loamy fine sand
7 to 20 inches—brown loamy fine sand
20 to 61 inches—pale brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Walco fine sand in convex positions (10 percent)
• Tupper extremely bouldery fine sandy loam in positions similar to those of the Fathom soil (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

56—Fathom loamy fine sand, 4 to 10 percent slopes

Composition

Fathom loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Fathom Soil

Position on landscape: Sloping areas on stream terraces
Typical profile:
0 to 7 inches—brown loamy fine sand
7 to 20 inches—brown loamy fine sand
20 to 61 inches—pale brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Walco fine sand in convex positions (10 percent)
- Tupper extremely bouldery fine sandy loam in positions similar to those of the Fathom soil (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

57—Fathom loamy fine sand, 10 to 20 percent slopes

Composition

Fathom loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Fathom Soil

Position on landscape: Sloping areas on stream terraces
Typical profile:
0 to 7 inches—brown loamy fine sand
7 to 20 inches—brown loamy fine sand
20 to 61 inches—pale brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Walco fine sand in convex positions (10 percent)
- Tupper extremely bouldery fine sandy loam in positions similar to those of the Fathom soil (5 percent)

Use and Management

Major uses: Pasture, hayland, and rangeland
Major management factors: Hazard of wind erosion and low available water capacity

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Range seeding is limited by the hazard of wind erosion and the low available water capacity.
• Forage species that can tolerate droughtiness should be seeded.
• Proper timing of seeding is critical because of the low available water capacity of the surface layer.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: 011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

58—Fathom-Ackelton complex, 0 to 4 percent slopes

Composition

Fathom fine sand and similar inclusions—50 percent
Ackelton loamy fine sand and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Characteristics of the Fathom Soil

Position on landscape: Drainageways on basalt plains
Typical profile:
0 to 9 inches—brown and yellowish brown fine sand
9 to 22 inches—yellowish brown and light yellowish brown fine sand
22 to 42 inches—very pale brown loamy fine sand
42 to 52 inches—white sandy loam
52 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 52 inches
Runoff: Very slow
Hazard of wind erosion: Very severe

Characteristics of the Ackelton Soil

Position on landscape: Drainageways on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—very pale brown loamy very fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Taunton loamy fine sand and Jestrick fine sand in convex positions (15 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture

Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

59—Fathom-Kudlac-Anchustequi complex, 8 to 35 percent slopes

Composition

Fathom loamy fine sand and similar inclusions—50 percent
Kudlac silt loam and similar inclusions—25 percent
Anchustequi loam and similar inclusions—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 2,700 to 3,200 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Fathom Soil

Position on landscape: Concave areas and toeslopes on stream terrace escarpments
Slope: 8 to 20 percent
Typical profile:
0 to 7 inches—brown loamy fine sand
7 to 20 inches—brown loamy fine sand
20 to 61 inches—pale brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Severe

Characteristics of the Kudlac Soil

Position on landscape: Convex areas and midslopes of lacustrine terraces and breaks
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 12 inches—pale brown silt loam
12 to 18 inches—light gray silt loam
18 to 23 inches—very pale brown silty clay loam
23 to 29 inches—pale brown silt loam
29 to 60 inches—very pale brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified lacustrine sediment at a depth of 23 inches
Runoff: Very rapid
Hazard of erosion: By water—very severe, by wind—moderate

Characteristics of the Anchustequi Soil

Position on landscape: Lacustrine terraces
Slope: 8 to 12 percent
Typical profile:
0 to 7 inches—pale brown loam
7 to 11 inches—very pale brown loam
11 to 60 inches—white, light brownish gray, light gray, and pale brown, stratified silty clay loam to fine sand
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
*Depth to water table:*12 to 36 inches
Available water capacity: High
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Water table at a depth of 12 to 36 inches
Runoff: Slow

Contrasting Inclusions

• Bahem very fine sandy loam in concave positions (5 percent)
• Kecko fine sandy loam in concave positions (5 percent)

Use and Management

Major use: Wildlife habitat
Major management factors: Hazard of water erosion on the Kudlac soil, hazard of wind erosion and low available water capacity of the Fathom soil, and salt accumulation and high water table in the Anchustequi soil

Wildlife Habitat

Dominant vegetation in potential natural plant community: Fathom soil—basin big sagebrush, Indian ricegrass, and needleandthread; Kudlac soil—black greasewood and basin wildrye; Anchustequi soil—black greasewood and saltgrass
Major management considerations:
• Select plant species that can tolerate the moderate amount of soluble salts in the subsoil of the

Anchustequi soil and the low available water capacity of Fathom soil.
• Selection of suitable plants and use of proper management practices are needed to overcome the hazard of wind erosion on the Fathom soil and the hazard of water erosion on the Kudlac soil.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Fathom soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8; Kudlac soil—011AY006ID Saline Upland 7-12 SAVE4/LECI4; Anchustequi soil—011AY007ID Semiwet Saline Meadow SAVE4/DISP

60—Fathom-Taunton complex, 1 to 4 percent slopes

Composition

Fathom fine sand and similar inclusions—50 percent
Taunton loamy fine sand and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Characteristics of the Fathom Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—brown and yellowish brown fine sand
9 to 22 inches—yellowish brown and light yellowish brown fine sand
22 to 42 inches—very pale brown loamy fine sand
42 to 52 inches—very pale brown sandy loam
52 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 52 inches
Runoff: Very slow
Hazard of wind erosion: Very severe

Characteristics of the Taunton Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 16 inches—brown loamy fine sand
16 to 29 inches—brown fine sandy loam
29 to 59 inches—pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Jestrick fine sand in convex positions (10 percent)
- Ackelton loamy fine sand in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

61—Fergie-Gaibson-Rock outcrop complex, 20 to 70 percent slopes

Composition

Fergie very gravelly loam and similar inclusions—65 percent
Gaibson extremely gravelly coarse sandy loam and similar inclusions—15 percent
Rock outcrop—15 percent
Contrasting inclusions—5 percent

Setting

Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Fergie Soil

Position on landscape: Concave areas on canyonsides
Typical profile:
0 to 9 inches—brown very gravelly loam
9 to 26 inches—yellowish brown very gravelly loam
26 to 49 inches—light yellowish brown extremely cobbly clay loam
49 inches—welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Gaibson Soil

Position on landscape: Structural benches and convex areas on canyonsides
Typical profile:
0 to 2 inches—brown extremely gravelly coarse sandy loam
2 to 13 inches—yellowish brown very gravelly sandy loam
13 to 19 inches—dark yellowish brown extremely gravelly clay loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 14 to 20 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Rock Outcrop

Kind of rock: “City of the Rocks” welded tuff
Position on landscape: Canyon rims and convex areas on canyonsides

Contrasting Inclusions

• Rubbleland near canyon rims and areas of Rock outcrop (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, very low available water capacity, Rock outcrop, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant communities: Fergie soil—mountain big sagebrush and bluebunch wheatgrass; Gaibson soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by steep slopes and the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low available water capacity of the Gaibson soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop and the shallow depth to bedrock in the Gaibson soil.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Fergie soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

62—Fergie-Gaibson-Terracecreek complex, 20 to 60 percent slopes

Composition

Fergie very gravelly loam and similar inclusions—30 percent
Gaibson very channery loam and similar inclusions—30 percent
Terracecreek very channery loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,700 to 5,900 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Fergie Soil

Position on landscape: Concave areas on canyonsides
Typical profile:
0 to 9 inches—brown very gravelly loam
9 to 26 inches—yellowish brown very gravelly loam
26 to 49 inches—light yellowish brown extremely gravelly sandy clay loam
49 inches—welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Gaibson Soil

Position on landscape: Structural benches and convex areas on canyonsides
Typical profile:
0 to 4 inches—brown very channery loam
4 to 9 inches—yellowish brown very channery clay loam
9 to 16 inches—dark yellowish brown very channery clay loam
16 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 14 to 20 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Terracecreek Soil

Position on landscape: Convex areas below structural benches on canyonsides
Typical profile:
0 to 4 inches—grayish brown very channery loam
4 to 10 inches—yellowish brown very channery loam
10 to 24 inches—light yellowish brown extremely channery loam
24 inches—highly fractured, welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Rubbleland on steep slopes (5 percent)
- Rock outcrop near canyon rims (5 percent)
- Simonton loam in drainageways (5 percent)
- Deep, loamy soils that have a thick, dark surface layer, are adjacent to streams, and are subject to rare flooding (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, very low available water capacity, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Fergie and Terracecreek soils—mountain big sagebrush and bluebunch wheatgrass; Gaibson soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very low available water capacity of the Gaibson and Terracecreek soils limits the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Gaibson soil.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Fergie soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6; Terracecreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6

63—Fergie-Moreglade-Mulshoe association, 3 to 30 percent slopes

Composition

Fergie gravelly loam and similar inclusions—40 percent
Moreglade extremely bouldery loam and similar inclusions—20 percent

Mulshoe extremely bouldery loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Characteristics of the Fergie Soil

Position on landscape: Side slopes on foothills
Aspect: South and west
Elevation: 5,200 to 6,200 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days
Typical profile:
0 to 10 inches—brown gravelly loam
10 to 22 inches—yellowish brown very gravelly clay loam
22 to 42 inches—light yellowish brown extremely gravelly sandy clay loam
42 inches—welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Characteristics of the Moreglade Soil

Position on landscape: Concave side slopes of foothills
Aspect: East
Slope: 12 to 30 percent
Elevation: 5,200 to 6,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days
Typical profile:
0 to 4 inches—dark brown extremely bouldery loam
4 to 10 inches—dark brown cobbly loam
10 to 60 inches—brown and yellowish brown very cobbly clay loam and very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Medium
Hazard of water erosion: Moderate or severe

Characteristics of the Mulshoe Soil

Position on landscape: Convex areas and side slopes of foothills
Aspect: All directions, but dominantly east
Elevation: 5,200 to 6,200 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days
Typical profile:
0 to 10 inches—very dark grayish brown and dark brown extremely bouldery loam
10 to 38 inches—brown very stony clay loam
38 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

- Simonton loam in concave positions (5 percent)
- Soils that are similar to the Moreglade soil but are extremely acidic and support ceanothus (5 percent)
- Gaibson very gravelly coarse sandy loam on eroded structural benches (5 percent)
- Rock outcrop on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, boulders in the surface layer, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Fergie soil—mountain big sagebrush and bluebunch wheatgrass; Moreglade and Mulshoe soils—mountain big sagebrush and Idaho fescue
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by boulders in the surface layer of the Moreglade and Mulshoe soils.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very low available water capacity of the Mulshoe soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Fergie soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Moreglade soil—010AY037ID Shrubby Stony North 12-16 ARTRV/FEID; Mulshoe soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID

64—Fergie-Moreglade-Terracecreek association, 25 to 65 percent slopes

Composition

Fergie very gravelly loam and similar inclusions—30 percent
Moreglade very stony loam and similar inclusions—25 percent
Terracecreek very gravelly loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,700 to 5,900 feet

Characteristics of the Fergie Soil

Position on landscape: Concave areas on canyonsides
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days
Typical profile:
0 to 9 inches—brown very gravelly loam
9 to 26 inches—yellowish brown very gravelly loam
26 to 49 inches—light yellowish brown extremely gravelly sandy clay loam
49 inches—welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Moreglade Soil

Position on landscape: Canyonsides
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days
Typical profile:
0 to 7 inches—brown very stony loam
7 to 26 inches—grayish brown very gravelly loam
26 to 42 inches—brown very cobbly clay loam
42 to 60 inches—yellowish brown very cobbly clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Terracecreek Soil

Position on landscape: Convex areas below structural benches on canyonsides
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days
Typical profile:
0 to 11 inches—grayish brown very gravelly loam
11 to 31 inches—yellowish brown and light yellowish brown very channery loam and extremely channery loam
31 inches—highly fractured, welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Rock outcrop near canyon rims (10 percent)
- Rubbleland on steep side slopes (5 percent)
- Gaibson extremely gravelly coarse sandy loam on structural benches (5 percent)
- Deep, loamy soils that have a thick, dark surface layer, are subject to rare flooding, and are adjacent to streams (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, very low available water capacity, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Fergie and Terracecreek soils—mountain big sagebrush and bluebunch wheatgrass; Moreglade soil—mountain big sagebrush and Idaho fescue
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and by the stones in the surface layer of the Moreglade soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very low available water capacity limits the selection of species suitable for seeding on the Terracecreek soil.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Fergie soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Moreglade soil—010AY037ID Shrubby Stony North 12-16 ARTRV/FEID; Terracecreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6

65—Fergie-Terracecreek-Gaibson complex, 2 to 25 percent slopes

Composition

Fergie gravelly loam and similar inclusions—45 percent
Terracecreek very channery loam and similar inclusions—25 percent
Gaibson extremely gravelly coarse sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,700 to 5,900 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Fergie Soil

Position on landscape: Concave areas on foothills
Typical profile:
0 to 10 inches—brown and yellowish brown gravelly loam
10 to 22 inches—yellowish brown very gravelly clay loam
22 to 52 inches—light yellowish brown extremely gravelly sandy clay loam
52 inches—highly fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Characteristics of the Terracecreek Soil

Position on landscape: Convex areas on side slopes below structural benches on foothills
Typical profile:
0 to 4 inches—grayish brown very channery loam
4 to 10 inches—yellowish brown very channery loam
10 to 24 inches—light yellowish brown extremely channery loam
24 inches—highly fractured, welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Gaibson Soil

Position on landscape: Structural benches and convex areas on foothills
Typical profile:
0 to 2 inches—brown extremely gravelly coarse sandy loam
2 to 13 inches—yellowish brown very gravelly loam
13 to 19 inches—dark yellowish brown extremely gravelly clay loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

- Molyneux loam on side slopes (5 percent)
- Rock outcrop on ridges (5 percent)
- Simonton loam in drainageways (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very low available water capacity, hazard of water erosion, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Fergie and Terracecreek soils—mountain big sagebrush and bluebunch wheatgrass; Gaibson soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
- Construction of fences and distribution of livestock are limited by the depth to bedrock in the Gaibson soil.
- Planned grazing systems that encourage the growth

of ground cover help to minimize the risk of water erosion.
• The very low available water capacity of the Terracecreek and Gaibson soils limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Fergie soil—010AY019ID Loamy 12-16 ARTRV/PSSP6; Terracecreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6; Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

66—Fluvaquents-Histic Endoaquolls complex, 0 to 3 percent slopes

Composition

Fluvaquents fine sandy loam and similar inclusions—50 percent
Histic Endoaquolls mucky peat and similar inclusions—40 percent
Contrasting inclusions—10 percent

Setting

Position on landscape: Dominantly in areas of springs and in drainageways on stream terraces and lacustrine terraces, but small areas in depressions on basalt plains
Elevation: 2,800 to 4,400 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 52 degrees F
Frost-free period: About 130 days

Characteristics of the Fluvaquents

Example profile:
0 to 7 inches—pale brown and light gray fine sandy loam
7 to 14 inches—gray fine sandy loam
14 to 50 inches—light gray loamy fine sand
50 to 60 inches—light gray, stratified loam to loamy fine sand
Depth class: Very deep
Drainage class: Poorly drained
Frequency of flooding: Frequent
Depth to water table: At the surface to a depth of 18 inches
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Water table at the surface to a depth of 18 inches
Runoff: Ponded

Characteristics of the Histic Endoaquolls

Example profile:
0 to 11 inches—black mucky peat with thin layers of mineral soil in some pedons
11 to 21 inches—very dark gray fine sandy loam
21 to 30 inches—light gray fine sandy loam
30 to 60 inches—light gray fine sandy loam and loamy fine sand
Depth class: Very deep
Drainage class: Poorly drained
Frequency of flooding: Frequent
Depth to water table: At the surface to a depth of 6 inches
Permeability: Moderate
Available water capacity: Low or moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Water table at the surface to a depth of 6 inches
Runoff: Ponded

Contrasting Inclusions

• Soils that are similar to the Fluvaquents and Histic Endoaquolls but are moderately well drained and are in slightly higher lying areas (10 percent)

Use and Management

Major uses: Wildlife habitat and pasture
Major management factors: Frequent flooding and depth to water table

Pasture

Commonly grown crop: Nonirrigated pasture
Major management considerations:
• Suitable management practices include grazing systems that allow for the wetness of the soils.
• Plants that can tolerate wetness and seasonal flooding should be seeded.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: Vw, nonirrigated
Range site: Fluvaquents and Histic Endoaquolls—011AY015ID Wet Meadow

67—Gaibson-Fergie-Rock outcrop complex, 2 to 12 percent slopes

Composition

Gaibson extremely gravelly coarse sandy loam and similar inclusions—65 percent

Fergie gravelly loam and similar inclusions—15 percent
Rock outcrop—15 percent
Contrasting inclusions—5 percent

Setting

Elevation: 5,100 to 5,600 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Gaibson Soil

Position on landscape: Structural benches and convex areas on foothills
Typical profile:
0 to 2 inches—brown extremely gravelly coarse sandy loam
2 to 13 inches—yellowish brown very gravelly loam
13 to 19 inches—dark yellowish brown extremely gravelly clay loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 14 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Fergie Soil

Position on landscape: Concave areas on canyonsides
Typical profile:
0 to 10 inches—brown gravelly loam
10 to 22 inches—yellowish brown very gravelly loam
22 to 52 inches—light yellowish brown extremely gravelly sandy clay loam
52 inches—welded tuff
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of rock: Welded tuff
Position on landscape: Convex side slopes

Contrasting Inclusions

• Rubbleland near the areas of Rock outcrop and Terracecreek very gravelly loam in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very low available water capacity, shallow depth to bedrock, Rock outcrop, and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Gaibson soil—low sagebrush and bluebunch wheatgrass; Fergie soil—mountain big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low available water capacity of the Gaibson soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop and the shallow depth to bedrock in the Gaibson soil.

Interpretive Groups

Capability classification: IVs, nonirrigated
Range site: Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6; Fergie soil—010AY019ID Loamy 12-16 ARTRV/PSSP6

68—Gaibson-Terracecreek-Rock outcrop complex, 2 to 20 percent slopes

Composition

Gaibson extremely gravelly coarse sandy loam and similar inclusions—35 percent
Terracecreek very channery loam and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,800 to 6,200 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Gaibson Soil

Position on landscape: Structural benches on foothills

Typical profile:
0 to 2 inches—brown extremely gravelly coarse sandy loam
2 to 13 inches—yellowish brown very gravelly loam
13 to 19 inches—dark yellowish brown extremely gravelly clay loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 14 to 20 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Terracecreek Soil

Position on landscape: Side slopes directly below structural benches on foothills
Typical profile:
0 to 4 inches—grayish brown very channery loam
4 to 10 inches—yellowish brown very channery loam
10 to 24 inches—light yellowish brown extremely channery loam
24 inches—highly fractured, welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Description of rock: Low, rounded areas and hoodoos of black, glassy welded tuff
Position on landscape: Structural benches

Contrasting Inclusions

- Fergie gravelly loam on side slopes (10 percent)
- Rubbleland on the steeper side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very low available water capacity, Rock outcrop, hazard of water erosion, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Terracecreek soil—mountain big sagebrush and bluebunch wheatgrass; Gaibson soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the areas of Rock outcrop.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very low available water capacity limits the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Gaibson soil and by the areas of Rock outcrop.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6; Terracecreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6

69—Gooding silt loam, 0 to 3 percent slopes

Composition

Gooding silt loam and similar inclusions—95 percent
Contrasting inclusions—5 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches

Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Elijah silt loam in convex areas (2 percent)
- Power silt loam on bottoms (2 percent)
- McPan silt loam in convex areas (1 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion and very slow permeability

Cropland

Commonly grown crops: Irrigated wheat (fig. 11), barley, sugar beets, potatoes, and corn
Major management considerations:
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Irrigation water should be applied slowly to compensate for the very slow permeability.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Suitable management practices are needed to overcome the hazard of water erosion.

Figure 11.—Irrigated wheat in an area of Gooding silt loam, 0 to 3 percent slopes.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Irrigation water should be applied slowly to compensate for the very slow permeability.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIs, irrigated

70—Gooding-Catchell complex, 1 to 3 percent slopes

Composition

Gooding silt loam and similar inclusions—55 percent
Catchell very stony silt loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—very pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Catchell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown and pale brown very stony silt loam
6 to 19 inches—light yellowish brown silty clay loam
19 to 21 inches—light brown silty clay loam
21 to 26 inches—pink silty clay loam
26 to 30 inches—lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• McPan silt loam in convex areas (5 percent)
• Bruncan stony loam in convex areas (5 percent)
• Power silt loam on bottoms (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion, stones in the surface layer, very slow permeability, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Catchell soil.
• The Catchell soil is poorly suited to use as cropland because of the stones in the surface layer.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Catchell soil.

• The Catchell soil is poorly suited to use as hayland and pasture because of the stones in the surface layer.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

71—Gooding-Elijah complex, 1 to 3 percent slopes

Composition

Gooding silt loam and similar inclusions—70 percent
Elijah silt loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave positions on basalt plains
Typical profile:
0 to 10 inches—brown silt loam
10 to 17 inches—yellowish brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—very pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 59 inches—white, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 45 inches
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Characteristics of the Elijah Soil

Position on landscape: Convex areas and side slopes of basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silty clay loam
10 to 15 inches—light yellowish brown silty clay loam
15 to 23 inches—yellowish brown silt loam
23 to 31 inches—very pale brown silt loam
31 to 45 inches—white, lime- and silica-cemented hardpan
45 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Catchell very stony silt loam in convex positions (5 percent)
• Power silt loam in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Depth to a hardpan, hazard of water erosion, and very slow permeability

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Elijah soil.
• Irrigation water should be applied slowly to compensate for the very slow permeability of the Gooding soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Elijah soil.

• Irrigation water should be applied slowly to compensate for the very slow permeability of the Gooding soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

72—Gooding-Marley-Hobby complex, 1 to 8 percent slopes

Composition

Gooding very cobbly silt loam and similar soils—40 percent
Marley silt loam and similar soils—25 percent
Hobby very stony silty clay loam and similar soils—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,400 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 100 days

Characteristics of the Gooding Soil

Position on landscape: Intermounds on basalt plains
Typical profile:
0 to 12 inches—grayish brown and brown very cobbly silt loam
12 to 37 inches—brown silty clay
37 to 44 inches—light brown silty clay loam
44 to 52 inches—pink, lime- and silica-cemented hardpan
52 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 44 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Marley Soil

Position on landscape: Mounds on basalt plains
Typical profile:
0 to 4 inches—pale brown silt loam
4 to 14 inches—brown silt loam
14 to 23 inches—pinkish gray silty clay loam
23 to 45 inches—brown silty clay
45 to 51 inches—pinkish gray silty clay
51 to 60 inches—pinkish white, lime- and silica-cemented hardpan
60 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 51 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Hobby Soil

Position on landscape: Eroded drainageways on basalt plains
Slope: 2 to 8 percent
Typical profile:
0 to 2 inches—grayish brown extremely stony silty clay
2 to 8 inches—yellowish brown silty clay
8 to 16 inches—brown silty clay
16 to 23 inches—brown very cobbly clay
23 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to the Catchell cobbly silt loam and are on intermounds (12 percent)
• Hamrub silt loam on mounds (3 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, shrink-swell potential, low available water capacity, very slow and slow permeability, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Gooding soil—alkali sagebrush and bluebunch wheatgrass; Marley soil—Wyoming sagebrush and bluebunch wheatgrass; Hobby soil—low sagebrush and bluebunch wheatgrass

Major management considerations:

• Seeding, mechanical treatment, and distribution of livestock are limited by the stones in the surface layer of the Hobby soil.

• The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

• The high shrink-swell potential and the low available water capacity of the Hobby soil limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Gooding soil—010AY006ID Clayey 11-14 ARARL/PSSP6; Marley soil—010AY026ID Loamy 11-13 ARTRW8/PSSP6; Hobby soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

73—Gooding-McHandy-Power complex, 1 to 8 percent slopes

Composition

Gooding very cobbly silt loam and similar inclusions—50 percent
McHandy silty clay loam and similar inclusions—15 percent
Power silt loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,600 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Gooding Soil

Position on landscape: Intermounds on basalt plateaus
Typical profile:
0 to 3 inches—brown very cobbly silt loam
3 to 8 inches—light brownish gray very cobbly silt loam
8 to 20 inches—brown silty clay
20 to 33 inches—yellowish brown silty clay loam
33 to 44 inches—light yellowish brown silty clay loam
44 to 57 inches—very pale brown loam
57 to 66 inches—light yellowish brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 57 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the McHandy Soil

Position on landscape: Circular areas about 20 feet in diameter midway between mound and intermound areas on basalt plateaus
Typical profile:
0 to 2 inches—pale brown silty clay loam
2 to 19 inches—yellowish brown silty clay loam
19 to 53 inches—yellowish brown silty clay
53 to 60 inches—pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Power Soil

Position on landscape: Mounds on basalt plateaus
Slope: 1 to 3 percent
Typical profile:
0 to 3 inches—light brownish gray silt loam
3 to 11 inches—brown silt loam
11 to 37 inches—brown silty clay loam
37 to 64 inches—pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

• Catchell silt loam that has slopes of 8 to 20 percent and is in convex positions (5 percent)

• Hobby extremely stony silty clay loam in drainageways (5 percent)

• Chilcott very stony silt loam in intermounds (5 percent)

- Rubbleland near fault scarps (3 percent)
- Bruncan stony loam in convex positions (2 percent)

Use and Management

Major use: Rangeland
Major management factors: Shrink-swell potential, very slow permeability, and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
- The high shrink-swell potential limits the selection of species suitable for seeding.
- The very slow permeability of the subsoil of the Gooding and McHandy soils causes saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the Gooding and McHandy soils.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Gooding soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6; McHandy soil—011AY010ID Churning Clay 8-12 ARTRW8/PSSP6; Power soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

74—Gooding-Power complex, 0 to 2 percent slopes

Composition

Gooding silt loam and similar inclusions—55 percent
Power silt loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Gooding Soil

Position on landscape: Smooth and concave areas and intermounds on basalt plains
Typical profile:
0 to 10 inches—pale brown silt loam
10 to 17 inches—light brown silty clay loam
17 to 23 inches—light yellowish brown silty clay
23 to 27 inches—pale brown silty clay loam
27 to 45 inches—very pale brown silty clay loam
45 to 54 inches—light yellowish brown loam
54 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 54 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Power Soil

Position on landscape: Concave areas and mounds on basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 23 inches—yellowish brown silt loam
23 to 29 inches—pale brown silt loam
29 to 40 inches—very pale brown silt loam
40 to 64 inches—very pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow

Contrasting Inclusions

- Catchell silt loam in intermounds (10 percent)
- Antelope Springs loam in slick spots on intermounds (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion and very slow permeability

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Suitable management practices are needed to overcome the hazard of water erosion on Gooding soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Irrigation water should be applied slowly to compensate for the very slow permeability of the Gooding soil.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Irrigation water should be applied slowly to compensate for the very slow permeability of the Gooding soil.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVs, irrigated

75—Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes

Composition

Haploxerolls loam and similar inclusions—50 percent
Camborthids loamy sand and similar inclusions—20 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Haploxerolls

Position on landscape: Smooth, slightly concave areas on stream terraces
Example profile:
0 to 3 inches—brown loam
3 to 16 inches—dark yellowish brown loam
16 to 60 inches—stratified fine gravel, sand, and loamy sand
Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Occasional
Permeability: Moderate to a depth of 16 inches and very rapid below
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Characteristics of the Camborthids

Position on landscape: Smooth, slightly elevated areas on stream terraces
Example profile:
0 to 14 inches—light brownish gray loamy sand
14 to 17 inches—light yellowish brown sandy loam
17 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Frequency of flooding: Occasional
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or very slow
Hazard of wind erosion: Severe

Characteristics of the Rock Outcrop

Kind of rock: Exposed basalt

Contrasting Inclusions

• Soils near streams and rivers that are similar to the Haploxerolls and Camborthids but are wet (15 percent)

Use and Management

Major use: Wildlife habitat
Major management factors: Rock outcrop, low and very low available water capacity, hazard of wind erosion, depth to bedrock, and hazard of flooding

Wildlife Habitat

Major management considerations:
• Rock outcrop, and the shallow depth to bedrock in the Camborthids limit the installation of fences and pipelines.
• Permanent cover is needed to minimize the risk of wind erosion.
• Seeding of native or adapted forage species is limited by the areas of Rock outcrop and the low and very low available water capacity.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Haploxerolls—011AY008ID Loamy Bottom

8-14 ARTRT/LECI4; Camborthids—
011AY003ID Shallow Fractured 8-12
ARTRT/PSSP6

76—Harsan-Schnipper complex, 1 to 4 percent slopes

Composition

Harsan loamy fine sand and similar inclusions—65 percent
Schnipper fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 3,600 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Harsan Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 14 inches—dark brown and brown loamy fine sand
14 to 29 inches—light yellowish brown and yellowish brown sandy clay loam and clay loam
29 to 42 inches—white loam
42 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Schnipper Soil

Position on landscape: Slightly convex areas on basalt plains
Typical profile:
0 to 8 inches—dark brown fine sandy loam
8 to 12 inches—dark yellowish brown fine sandy loam
12 to 16 inches—yellowish brown clay loam
16 to 29 inches—very pale brown and light gray fine sandy loam and loam
29 to 58 inches—white, lime- and silica-cemented hardpan
58 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Bruncan stony loam on ridges (5 percent)
- Power very fine sandy loam in drainageways (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Schnipper soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Schnipper soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

77—Harsan-Snowmore-Idow complex, 1 to 4 percent slopes

Composition

Harsan loamy fine sand and similar inclusions—40 percent
Snowmore very fine sandy loam and similar inclusions—30 percent
Idow fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,400 to 4,000 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Harsan Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—brown loamy fine sand
9 to 13 inches—yellowish brown fine sandy loam
13 to 28 inches—yellowish brown sandy clay loam and clay loam
28 to 52 inches—very pale brown loam
52 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 52 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Snowmore Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 7 inches—pale brown very fine sandy loam
7 to 27 inches—yellowish brown loam
27 to 31 inches—pale brown gravelly loam
31 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—fractured basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Characteristics of the Idow Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 6 inches—brown fine sandy loam
6 to 17 inches—yellowish brown fine sandy loam
17 to 21 inches—yellowish brown sandy clay loam
21 to 35 inches—very pale brown loam
35 to 51 inches—white, lime- and silica-cemented hardpan
51 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 35 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Bruncan stony fine sandy loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, depth to a hardpan, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Proper irrigation water management is needed to compensate for the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Proper irrigation water management is needed to compensate for the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

78—Harsan-Wako complex, 1 to 6 percent slopes

Composition

Harsan loamy fine sand and similar inclusions—55 percent
Wako loamy fine sand and similar inclusions—25 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Harsan Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—brown loamy fine sand
9 to 13 inches—yellowish brown fine sandy loam
13 to 28 inches—yellowish brown sandy clay loam and clay loam
28 to 52 inches—very pale brown loam
52 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 52 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 12 inches—pale brown loamy fine sand
12 to 19 inches—yellowish brown sandy clay loam
19 to 25 inches—yellowish brown clay loam
25 to 31 inches—pale brown sandy clay loam
31 to 43 inches—white, lime- and silica-cemented hardpan
43 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Harsan and Wako soils that have slopes of 4 to 8 percent (10 percent)
• Jestrick loamy fine sand in convex positions (5 percent)
• Rekima very stony fine sandy loam on ridges (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to compensate for the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to compensate for the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

79—Harsan-Wendell complex, 2 to 12 percent slopes

Composition

Harsan loamy fine sand and similar inclusions—40 percent
Wendell loamy fine sand and similar inclusions—35 percent
Contrasting inclusions—25 percent

Setting

Elevation: 3,400 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Harsan Soil

Position on landscape: Depressions and drainageways in basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 16 inches—brown loamy fine sand
16 to 26 inches—yellowish brown sandy loam
26 to 38 inches—yellowish brown sandy clay loam
38 to 50 inches—light yellowish brown sandy clay loam and loam
50 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 50 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Wendell Soil

Position on landscape: Convex side slopes and tops of basalt plains
Typical profile:
0 to 5 inches—dark grayish brown and brown loamy fine sand
5 to 18 inches—yellowish brown and light yellowish brown sandy loam
18 to 29 inches—yellowish brown and pale brown sandy clay loam
29 to 36 inches—very pale brown sandy clay loam
36 to 38 inches—very pale brown, lime- and silica-cemented hardpan
38 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 36 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—severe

Contrasting Inclusions

• Wako loamy fine sand in convex positions (10 percent)
• Quincy fine sand on sand dunes and Rekima stony sandy loam on ridges (10 percent)
• Rock outcrop on convex ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread

Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity of the Wendell soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Harsan and Wendell soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

80—Hobby-Rubbleland-Rock outcrop complex, steep

Composition

Hobby extremely stony silty clay and similar inclusions—40 percent
Rubbleland—30 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 4,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Hobby Soil

Position on landscape: Fault escarpments and canyonsides
Slope: 20 to 35 percent
Typical profile:
0 to 4 inches—very dark grayish brown extremely stony silty clay
4 to 17 inches—dark brown silty clay
17 to 21 inches—dark brown very cobbly clay
21 to 27 inches—highly weathered basalt
27 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rubbleland

Kind of material: Basalt boulders and stones
Position on landscape: Steeper areas on upper part of canyonsides

Characteristics of the Rock Outcrop

Kind of rock: Nearly vertical areas of basalt
Position on landscape: Along canyon rims

Contrasting Inclusions

• Xeric Torriorthents stony loam on slopes of 35 to 60 percent (10 percent)
• Soils that are similar to the Hobby soil but are deep to bedrock (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Rubbleland, Rock outcrop, steep slopes, hazard of water erosion, shrink-swell potential, stones in the surface layer, low available water capacity, and very slow permeability

Rangeland

Dominant vegetation in potential natural plant community: Low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes, stones in the surface layer, and the areas of Rock outcrop and Rubbleland.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• The high shrink-swell potential and low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Hobby soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

81—Hoosegow sandy loam, 0 to 3 percent slopes

Composition

Hoosegow sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Hoosegow Soil

Position on landscape: Drainageways and concave areas of basalt plains
Typical profile:
0 to 12 inches—brown sandy loam
12 to 44 inches—yellowish brown sandy clay loam
44 to 56 inches—light yellowish brown fine sandy loam
56 to 64 inches—light yellowish brown loamy sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Kecko loamy fine sand in concave positions (5 percent)
• Harsan fine sandy loam in convex positions (5 percent)
• Wako sandy loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factor: Hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, corn for silage, sugar beets, dry beans, potatoes, and sweet corn
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIe, irrigated

82—Hoosegow-McPan-Rock outcrop complex, 2 to 10 percent slopes

Composition

Hoosegow loam and similar inclusions—35 percent
McPan silt loam and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Hoosegow Soil

Position on landscape: Drainageways and toeslopes of basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 2 inches—dark grayish brown loam
2 to 12 inches—brown and yellowish brown loam
12 to 20 inches—light yellowish brown loam
20 to 37 inches—yellowish brown sandy clay loam
37 to 56 inches—yellowish brown fine sandy loam
56 to 68 inches—light yellowish brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the McPan Soil

Position on landscape: Side slopes and tops of basalt plains

Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of rock: Basalt
Position on landscape: Convex tops and steep side slopes of basalt plains

Contrasting Inclusions

- Banbury stony loam on convex tops (10 percent)
- Gooding silt loam in areas where runoff accumulates (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Hoosegow soil—basin big sagebrush and basin wildrye; McPan soil—Wyoming big sagebrush and Thurber needlegrass
Major management considerations:
- Seeding and mechanical treatment are limited by the areas of Rock outcrop.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
- The low available water capacity limits the selection of species suitable for seeding on the McPan soil.
- Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Hoosegow soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4; McPan soil—011AY001ID Loamy 8-10 ARTRW8/ACTH7

83—Idow-Ackelton complex, 1 to 4 percent slopes

Composition

Idow fine sandy loam and similar inclusions—45 percent
Ackelton loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Idow Soil

Position on landscape: Convex and smooth areas of basalt plains
Typical profile:
0 to 6 inches—brown fine sandy loam
6 to 17 inches—yellowish brown fine sandy loam
17 to 21 inches—yellowish brown sandy clay loam
21 to 35 inches—very pale brown loam
35 to 51 inches—white, lime- and silica-cemented hardpan
51 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 35 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Ackelton Soil

Position on landscape: Concave and smooth areas on the leeward side of ridges on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam

53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—white loamy very fine sand

Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Quincy loamy sand in depressions (5 percent)
- Vining loamy very fine sand in convex positions (5 percent)
- Chijer loamy fine sand (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:

- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Idow soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity of Idow soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:

- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Idow soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity of Idow soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

84—Idow-Bruncan-Wendell complex, 1 to 3 percent slopes

Composition

Idow loamy fine sand and similar inclusions—40 percent
Bruncan very stony loamy fine sand and similar inclusions—25 percent
Wendell loamy fine sand and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,400 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Idow Soil

Position on landscape: Concave areas on basalt plains
Typical profile:

0 to 6 inches—dark yellowish brown and brown loamy fine sand
6 to 17 inches—brown sandy clay loam
17 to 21 inches—very pale brown sandy clay loam
21 to 31 inches—very pale brown fine sandy loam
31 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Bruncan Soil

Position on landscape: Broad ridgetops on basalt plains

Typical profile:
0 to 6 inches—brown very stony loamy fine sand
6 to 14 inches—light yellowish brown sandy clay loam
14 to 19 inches—very pale brown very cobbly fine sandy loam
19 to 26 inches—white, lime- and silica-cemented hardpan
26 inches—basalt

Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 11 to 19 inches
Restriction to rooting depth: Hardpan at a depth of 19 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 4 inches—brown loamy fine sand
4 to 16 inches—light yellowish brown fine sandy loam
16 to 25 inches—pale brown loam
25 to 32 inches—very pale brown, lime- and silica-cemented hardpan
32 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 25 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Minveno very fine sandy loam on ridges (10 percent)
• Ackelton loamy fine sand in drainageways (5 percent)
• Idow, Bruncan, and Wendell soils that have slopes of 4 to 6 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, very low and low available water capacity, depth to a hardpan, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to compensate for the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Idow soil and by the depth to the hardpan and to bedrock in the Wendell and Bruncan soils.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to compensate for the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Idow soil and by the depth to the hardpan and to bedrock in the Wendell and Bruncan soils.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

85—Idow-Power-Minveno complex, 1 to 4 percent slopes

Composition

Idow loam and similar inclusions—45 percent
Power silt loam and similar inclusions—20 percent
Minveno loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Idow Soil

Position on landscape: Side slopes and toeslopes of basalt buttes
Typical profile:
0 to 6 inches—brown loam
6 to 16 inches—yellowish brown loam
16 to 22 inches—light yellowish brown loam
22 to 27 inches—very pale brown loam
27 to 46 inches—white, lime- and silica-cemented hardpan
46 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 27 inches
Runoff: Slow

Characteristics of the Power Soil

Position on landscape: Concave areas on toeslopes of buttes
Typical profile:
0 to 6 inches—brown loam
6 to 23 inches—yellowish brown silt loam
23 to 29 inches—pale brown silt loam
29 to 54 inches—very pale brown silt loam
54 to 60 inches—very pale brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Characteristics of the Minveno Soil

Position on landscape: Ridges on basalt buttes
Typical profile:
0 to 4 inches—pale brown loam
4 to 7 inches—pale brown silt loam
7 to 12 inches—very pale brown loam
12 to 37 inches—white, lime- and silica-cemented hardpan
37 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 12 inches
Runoff: Slow

Contrasting Inclusions

• Idow, Power, and Minveno soils that have slopes of 4 to 6 percent (10 percent)
• Besslen gravelly loam on plowed ridges (5 percent)
• Antelope Springs loam in small, closed depressions (5 percent)

Use and Management

Major uses: Rangeland, cropland, hayland, and pasture
Major management factors: Hazard of erosion, depth to a hardpan and to bedrock, and very low and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, and sugar beets
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Idow and Minveno soils and the depth to bedrock in the Minveno soil.
• Irrigation water management is needed to compensate for the very low and low available water capacity of Minveno and Idow soils and to balance the irrigation requirements of the soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Idow and Minveno soils and the depth to bedrock in the Minveno soil.
• Irrigation water management is needed to compensate for the very low and low available water capacity of Minveno and Idow soils and to balance the irrigation requirements of the soils.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Idow and Minveno soils—Wyoming big sagebrush and bluebunch wheatgrass; Power soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very low and low available water capacity of the Minveno and Idow soils limit the selection of species suitable for seeding.
• Proper distribution of livestock and construction of fences and stock water pipelines are limited by the depth to the cemented pan in the Idow and Minveno soils and the depth to bedrock in the Minveno soil.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Idow and Power soils—011AY009ID Loamy 8-12 ARTRT/PSSP6; Minveno soil—011XY003ID Loamy 7-10 ARTRW8/ACTH7

86—Idow-Wendell-Bruncan complex, 3 to 8 percent slopes

Composition

Idow loamy fine sand and similar inclusions—40 percent
Wendell fine sandy loam and similar inclusions—25 percent
Bruncan stony loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Idow Soil

Position on landscape: Concave areas of basalt plains
Typical profile:
0 to 6 inches—dark yellowish brown and brown loamy fine sand
6 to 17 inches—brown sandy clay loam
17 to 21 inches—very pale brown sandy clay loam
21 to 31 inches—very pale brown fine sandy loam
31 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Wendell Soil

Position on landscape: Convex areas of basalt plains
Typical profile:
0 to 7 inches—brown fine sandy loam
7 to 16 inches—yellowish brown fine sandy loam
16 to 22 inches—pale brown cobbly loam
22 to 24 inches—white, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Bruncan Soil

Position on landscape: Broad ridgetops on basalt plains
Typical profile:
0 to 6 inches—brown stony loam
6 to 11 inches—pale brown clay loam
11 to 13 inches—very pale brown very cobbly fine sandy loam
13 to 18 inches—very pale brown, lime- and silica-cemented hardpan
18 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 11 to 19 inches

Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 13 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Ackleton loamy fine sand that has slopes of 1 to 4 percent (10 percent)
• Idow loamy fine sand that has slopes of 1 to 3 percent (5 percent)

Use and Management

Major uses: Rangeland, cropland, pasture, and hayland
Major management factors: Hazards of wind and water erosion, low and very low available water capacity, and depth to a hardpan and to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Idow and Wendell soils—basin big sagebrush, Indian ricegrass, and needleandthread; Bruncan soil—Wyoming big sagebrush and Thurber needlegrass
Major management considerations:
• Rangeland seeding is limited by the hazard of erosion, the low available water capacity of the Idow and Wendell soils, and the very low available water capacity of the Bruncan soil.
• Brush management is limited by the hazards of wind and water erosion.
• Distribution of livestock and construction of fences are limited by the depth to the hardpan and to bedrock in the Bruncan soil.
• Construction of stock water pipelines is limited by the depth to the hardpan in the soils.

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to compensate for the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Bruncan soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Bruncan soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Idow and Wendell soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8; Bruncan soil—011XY003ID Loamy 7-10 ARTRW8/ACTH7

87—Idow-Wendell-Minveno complex, 1 to 3 percent slopes

Composition

Idow fine sandy loam and similar inclusions—45 percent
Wendell fine sandy loam and similar inclusions—25 percent
Minveno cobbly fine sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Idow Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 7 inches—brown fine sandy loam

7 to 19 inches—yellowish brown sandy clay loam
19 to 34 inches—very pale brown loam
34 to 47 inches—white, lime- and silica-cemented hardpan
47 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 34 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 7 inches—brown fine sandy loam
7 to 16 inches—yellowish brown fine sandy loam
16 to 22 inches—pale brown cobbly loam
22 to 24 inches—white, lime- and silica-cemented hardpan
24 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Characteristics of the Minveno Soil

Position on landscape: Broad ridgetops on basalt plains
Typical profile:
0 to 4 inches—brown cobbly fine sandy loam
4 to 17 inches—yellowish brown very fine sandy loam
17 to 21 inches—very pale brown, lime- and silica-cemented hardpan
21 inches—basalt

Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 17 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Ackelton fine sandy loam in concave positions (10 percent)
• Idow, Wendell, and Minveno soils that have slopes of 3 to 6 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazards of wind and water erosion, low and very low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to compensate for the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Minveno soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture
Major management considerations:
• Irrigation water management is needed to compensate for the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Minveno soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

88—Jestrick loamy fine sand, 1 to 4 percent slopes

Composition

Jestrick loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 5 inches—brown and yellowish brown loamy fine sand
5 to 16 inches—yellowish brown fine sandy loam
16 to 22 inches—very pale brown cobbly fine sandy loam
22 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Kecko loamy fine sand in depressions (10 percent)
- Fathom fine sand in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

89—Jestrick fine sandy loam, 0 to 2 percent slopes

Composition

Jestrick fine sandy loam and similar soils—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 4 inches—yellowish brown fine sandy loam
4 to 20 inches—brown and yellowish brown loam
20 to 32 inches—pale brown fine sandy loam
32 to 38 inches—pale brown, lime- and silica-cemented hardpan
38 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Quincy fine sand in concave positions (5 percent)
- Taunton fine sandy loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

90—Jestrick-Fathom complex, 0 to 4 percent slopes

Composition

Jestrick fine sand and similar inclusions—50 percent
Fathom fine sand and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 17 inches—pale brown and light yellowish brown fine sand
17 to 23 inches—pale brown fine sandy loam
23 to 38 inches—very pale brown, lime- and silica-cemented hardpan
38 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Very low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 23 inches
Runoff: Very slow or slow
Hazard of wind erosion: Very severe

Characteristics of the Fathom Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—brown and yellowish brown fine sand
9 to 22 inches—yellowish brown and light yellowish brown fine sand
22 to 42 inches—very pale brown loamy fine sand
42 to 52 inches—white sandy loam
52 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 52 inches
Runoff: Very slow or slow
Hazard of wind erosion: Very severe

Contrasting Inclusions

- Rekima extremely stony loam on ridges (10 percent)
- Quincy fine sand in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland

Major management factors: Very severe hazard of wind erosion, low and very low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the very low available water capacity of the Jestrick soil and the low available water capacity of the Fathom soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Jestrick soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low available water capacity of the Jestrick soil and the low available water capacity of the Fathom soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Jestrick soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

91—Jestrick-Kecko complex, 2 to 8 percent slopes

Composition

Jestrick fine sandy loam and similar inclusions—45 percent
Kecko loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 4 inches—dark yellowish brown fine sandy loam
4 to 26 inches—brown or dark yellowish brown loam
26 to 32 inches—brown fine sandy loam
32 to 38 inches—pale brown, lime- and silica-cemented hardpan
38 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Kecko Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 14 inches—brown and yellowish brown loamy fine sand
14 to 27 inches—yellowish brown fine sandy loam
27 to 46 inches—pale brown and very pale brown fine sandy loam
46 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Wako fine sandy loam (10 percent)
• Ackelton fine sandy loam on gently sloping side slopes and in drainageways (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazards of wind and water erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Jestrick soil.
• Suitable management practices are needed to overcome the hazard of wind erosion on the Kecko soil and the hazards of wind and water erosion on the Jestrick soil.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Jestrick soil.
• Suitable management practices are needed to overcome the hazard of wind erosion on the Kecko soil and the hazards of wind and water erosion on the Jestrick soil.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

92—Jestrick-Kecko-Rock outcrop complex, 2 to 12 percent slopes

Composition

Jestrick very fine sandy loam and similar inclusions—40 percent
Kecko very fine sandy loam and similar inclusions—25 percent
Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,300 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown very fine sandy loam
6 to 18 inches—pale brown and yellowish brown fine sandy loam
18 to 26 inches—very pale brown cobbly fine sandy loam
26 to 36 inches—very pale brown, lime- and silica-cemented hardpan
36 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 21 to 32 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Slow to rapid
Hazard of erosion: By water—moderate to very severe; by wind—moderate

Characteristics of the Kecko Soil

Position on landscape: Concave areas on basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 9 inches—brown very fine sandy loam
9 to 17 inches—yellowish brown fine sandy loam
17 to 52 inches—pale brown and very pale brown fine sandy loam
52 to 61 inches—very pale brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Rock Outcrop

Kind of material: Exposed basalt
Position on landscape: Convex areas and pressure ridges

Contrasting Inclusions

- Starbuck cobbly silt loam in convex positions (10 percent)
- Quincy fine sand in concave positions (5 percent)

Use and Management

Major uses: Rangeland, cropland, pasture, and hayland

Major management factors: Hazards of wind and water erosion, low available water capacity, and depth to a hardpan and to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Jestrick soil—Wyoming big sagebrush and Thurber needlegrass; Kecko soil—basin big sagebrush and bluebunch wheatgrass

Major management considerations:

- Rangeland seeding is limited by the hazard of erosion and the low available water capacity of the Jestrick soil.
- Brush management is limited by the hazards of wind and water erosion.
- Distribution of livestock, construction of fences, and excavation for stock water pipelines are limited by the depth to the hardpan and to bedrock in the Jestrick soil.

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn

Major management considerations:

- Irrigation water management is needed to overcome the low available water capacity of the Jestrick soil.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Jestrick soil.
- Suitable management practices are needed to overcome the hazards of wind and water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture

Major management considerations:

- Irrigation water management is needed to overcome the low available water capacity of the Jestrick soil.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Jestrick soil.
- Suitable management practices are needed to overcome the hazards of wind and water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated

Range site: Jestrick soil—011XY003ID Loamy 7-10 ARTRW8/ACTH7; Kecko soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

93—Jestrick-Starbuck-Kecko complex, 1 to 6 percent slopes

Composition

Jestrick loamy very fine sand and similar inclusions—35 percent

Starbuck loamy very fine sand and similar inclusions—30 percent

Kecko loamy very fine sand and similar inclusions—20 percent

Contrasting inclusions—15 percent

Setting

Elevation: 2,900 to 3,500 feet

Average annual precipitation: About 10 inches

Average annual air temperature: About 49 degrees F

Frost-free period: About 110 days

Characteristics of the Jestrick Soil

Position on landscape: Convex areas on basalt plains

Typical profile:

0 to 9 inches—brown loamy very fine sand

9 to 13 inches—pale brown fine sandy loam

13 to 26 inches—very pale brown cobbly fine sandy loam

26 to 29 inches—white, lime- and silica-cemented hardpan

29 inches—basalt

Depth class: Moderately deep to a hardpan

Drainage class: Somewhat excessively drained

Permeability: Moderately rapid

Available water capacity: Low

Potential rooting depth: 21 to 32 inches

Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches

Runoff: Slow or medium
Hazard of wind erosion: Severe

Characteristics of the Starbuck Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown loamy very fine sand
6 to 16 inches—yellowish brown very fine sandy loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Kecko Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 5 inches—brown loamy very fine sand
5 to 12 inches—brown fine sandy loam
12 to 48 inches—very pale brown and pale brown fine sandy loam
48 to 60 inches—light yellowish brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Quincy loamy fine sand in concave positions (8 percent)
• Starbuck very cobbly silt loam in convex positions (7 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to bedrock and to a hardpan, and low and very low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Starbuck and Jestrick soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Starbuck and Jestrick soils.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

94—Kecko loamy fine sand, 1 to 4 percent slopes

Composition

Kecko loamy fine sand and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 100 days

Characteristics of the Kecko Soil

Position on landscape: Nearly level to undulating areas of basalt plains
Typical profile:
0 to 5 inches—pale brown loamy fine sand
5 to 14 inches—brown fine sandy loam
14 to 30 inches—pale brown fine sandy loam
30 to 40 inches—light gray fine sandy loam
40 to 61 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained

Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow
Hazard of erosion: By water—moderate; by wind—severe

Contrasting Inclusions

• Paulville fine sandy loam in depressions (10 percent)
• Vining loamy fine sand in convex positions (10 percent)

Use and Management

Major uses: Cropland, rangeland, hayland, and pasture
Major management factors: Hazards of wind and water erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity limits the selection of species suitable for seeding.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: 011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

95—Kecko loamy fine sand, 4 to 8 percent slopes

Composition

Kecko loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,800 to 3,250 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Kecko Soil

Position on landscape: Gently sloping areas of stream terraces
Typical profile:
0 to 9 inches—brown loamy fine sand
9 to 22 inches—yellowish brown fine sandy loam
22 to 29 inches—light yellowish brown loamy very fine sand and fine sandy loam
29 to 64 inches—very pale brown and light brown silt loam and very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Kecko loamy fine sand that has slopes of 1 to 4 percent (5 percent)
• Fathom loamy fine sand in concave positions (5 percent)
• Wendell loamy fine sand in convex positions (5 percent)

Geographic Inclusions

• Small areas in Lincoln County at elevations of 3,500 to 4,500 feet

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.

Interpretive Groups

Capability classification: IIIe, irrigated

96—Kecko fine sandy loam, 0 to 2 percent slopes

Composition

Kecko fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Kecko Soil

Position on landscape: Drainageways of basalt plains
Typical profile:
0 to 10 inches—brown fine sandy loam
10 to 28 inches—yellowish brown fine sandy loam
28 to 45 inches—light yellowish brown fine sandy loam
45 to 64 inches—light brown fine sand
64 to 72 inches—multicolored sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Taunton fine sandy loam on higher lying stream terraces (5 percent)
• Fathom fine sand (5 percent)
• Jestrick fine sandy loam in sloping areas along the map unit boundary (5 percent)

Geographic Inclusions

• Small areas in Lincoln County at elevations of 3,500 to 4,300 feet

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIc, irrigated

97—Kecko fine sandy loam, 2 to 4 percent slopes

Composition

Kecko fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,800 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Kecko Soil

Position on landscape: Gently sloping areas of stream terraces
Typical profile:
0 to 9 inches—brown fine sandy loam
9 to 21 inches—yellowish brown fine sandy loam
21 to 44 inches—light yellowish brown loamy very fine sand and fine sandy loam
44 to 60 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Ephrata fine sandy loam (10 percent)
- Quincy fine sand in level or slightly convex positions (5 percent)

Geographic Inclusions

- Histic Haplaquolls in an area about 3 miles south of the town of Hagerman
- Small areas in Lincoln County at elevations of 3,500 to 4,300 feet

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIe, irrigated

98—Kecko fine sandy loam, 4 to 8 percent slopes

Composition

Kecko fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,800 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Kecko Soil

Position on landscape: Stream terraces
Typical profile:
0 to 9 inches—brown fine sandy loam
9 to 21 inches—yellowish brown fine sandy loam
21 to 44 inches—light yellowish brown loamy very fine sand and fine sandy loam
44 to 60 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Kecko fine sandy loam that has slopes of 1 to 4 percent (10 percent)
- Quincy fine sand (5 percent)

Geographic Inclusions

- Histic Haplaquolls in an area about 3 miles south of the town of Hagerman

Use and Management

Major uses: Cropland, pasture, and hayland

Major management factors: Hazard of wind erosion

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

99—Kecko fine sandy loam, hardpan substratum, 2 to 4 percent slopes

Composition

Kecko fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Kecko Soil

Position on landscape: Drainageways of basalt plains
Typical profile:
0 to 14 inches—brown and yellowish brown fine sandy loam
14 to 27 inches—yellowish brown fine sandy loam
27 to 46 inches—pale brown and very pale brown fine sandy loam
46 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 42 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Taunton fine sandy loam in convex positions (10 percent)
• Kecko loamy fine sand that has slopes of 4 to 8 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion

Cropland

Commonly grown crops: Wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

100—Kecko-Snowmore complex, 2 to 20 percent slopes

Composition

Kecko fine sandy loam and similar inclusions—45 percent
Snowmore fine sandy loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Kecko Soil

Position on landscape: Side slopes and depressions on basalt plains
Slope: 2 to 8 percent
Typical profile:
0 to 5 inches—pale brown fine sandy loam
5 to 31 inches—brown fine sandy loam
31 to 60 inches—pale brown, very pale brown, and light gray loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Medium to very rapid
Hazard of erosion: By water—moderate; by wind—moderate

Characteristics of the Snowmore Soil

Position on landscape: Convex areas of basalt plains
Typical profile:
0 to 7 inches—brown, dark yellowish brown, and yellowish brown fine sandy loam
7 to 16 inches—light yellowish brown and yellowish brown sandy clay loam and clay loam
16 to 24 inches—white gravelly sandy loam
24 to 28 inches—white, lime- and silica-cemented hardpan
28 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 24 inches
Runoff: Medium to very rapid
Hazard of erosion: By water—slight to very severe; by wind—moderate

Contrasting Inclusions

• Banbury very cobbly fine sandy loam in convex positions (10 percent)
• Paulville loamy fine sand in drainageways (5 percent)
• Rock outcrop on ridgetops and side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Kecko soil—basin big sagebrush and bluebunch wheatgrass; Snowmore soil—Wyoming big sagebrush and Thurber needlegrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity of the Snowmore soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Kecko soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Snowmore soil—011AY001ID Loamy 8-10 ARTRW8/ACTH7

101—Kecko-Vining-Rock outcrop complex, 2 to 15 percent slopes

Composition

Kecko loamy very fine sand and similar inclusions—50 percent
Vining loamy very fine sand and similar inclusions—25 percent
Rock outcrop—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 2,900 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Kecko Soil

Position on landscape: Depressions and drainageways in basalt plains
Slope: 2 to 8 percent
Typical profile:
0 to 6 inches—brown loamy very fine sand
6 to 18 inches—yellowish brown fine sandy loam
18 to 26 inches—pale brown and very pale brown fine sandy loam
26 to 60 inches—pale brown and very pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Vining Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 4 inches—brown loamy very fine sand
4 to 16 inches—light yellowish brown and pale brown fine sandy loam and very fine sandy loam
16 to 25 inches—very pale brown very fine sandy loam
25 inches—lime-coated basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of wind erosion: Severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Convex areas on basalt plains

Contrasting Inclusions

- Starbuck loamy very fine sand in convex positions (5 percent)
- Quincy very fine sand in concave positions (5 percent)

Use and Management

Major uses: Rangeland, cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
- Rangeland seeding is limited by the hazard of wind erosion and the low available water capacity.
- Brush management is limited by the hazard of wind erosion.
- Distribution of livestock, construction of fences, and excavation for stock water pipelines are limited by the depth to bedrock in the Vining soil.

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Vining soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa hay and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Vining soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Kecko and Vining soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

102—Kinzie-Marley complex, 6 to 15 percent slopes

Composition

Kinzie cobbly silt loam and similar inclusions—45 percent
Marley silt loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 4,700 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Kinzie Soil

Position on landscape: Near areas of Rock outcrop and on ridges of basalt plains and buttes
Typical profile:
0 to 9 inches—yellowish brown cobbly silt loam
9 to 12 inches—pale brown silt loam
12 to 28 inches—brown silty clay loam
28 to 35 inches—yellowish brown silty clay
35 to 39 inches—pale brown silty clay loam
39 to 45 inches—pinkish white, lime- and silica-cemented hardpan
45 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 21 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 39 inches
Runoff: Slow to very rapid
Hazard of water erosion: Moderate to very severe

Characteristics of the Marley Soil

Position on landscape: Smooth, concave and most convex areas on buttes and basalt plains
Typical profile:
0 to 8 inches—grayish brown and brown silt loam
8 to 12 inches—yellowish brown silty clay loam
12 to 29 inches—yellowish brown silty clay loam
29 to 42 inches—pale brown and very pale brown silty clay loam
42 to 66 inches—very pale brown and pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Slow to very rapid
Hazard of water erosion: Moderate to very severe

Contrasting Inclusions

• Rock outcrop on ridges (5 percent)
• Ruckles very stony silt loam near areas of Rock outcrop (5 percent)
• Perla silt loam in smooth, convex positions and Kinzie and Marley soils that have slopes of 2 to 6 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of water erosion, and depth to a hardpan and cobbles on the surface of the Kinzie soil

Cropland

Commonly grown crops: Irrigated wheat, barley, and corn for silage
Major management considerations:
• Suitable management practices are needed to overcome the hazard of water erosion.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
• Cobbles on the surface of the Kinzie soil may need to be removed.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
• Cobbles on the surface of the Kinzie soil may need to be removed.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Distribution of livestock and installation of stock water pipelines are limited by the depth to the hardpan and the cobbles on the surface of the Kinzie soil.
• The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Kinzie and Marley soils—010AY026ID Loamy 11-13 ARTRW8/PSSP6

103—Kinzie-Marley-Rock outcrop complex, 2 to 6 percent slopes

Composition

Kinzie silt loam and similar inclusions—55 percent
Marley silt loam and similar inclusions—20 percent
Rock outcrop—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,200 to 4,700 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Kinzie Soil

Position on landscape: Smooth, convex areas near the areas of Rock outcrop and drainageways of basalt buttes and plains
Typical profile:
0 to 6 inches—brown and yellowish brown silt loam
6 to 23 inches—yellowish brown and light yellowish brown silty clay loam
23 to 27 inches—very pale brown silty clay loam
27 to 38 inches—pinkish white silty clay loam
38 to 47 inches—pinkish white, lime- and silica-cemented hardpan
47 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 21 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow or medium
Hazard of water erosion: Moderate or severe

Characteristics of the Marley Soil

Position on landscape: Smooth, concave areas of buttes and basalt plains
Typical profile:
0 to 8 inches—brown silt loam
8 to 12 inches—yellowish brown silt loam
12 to 29 inches—yellowish brown silty clay loam
29 to 42 inches—very pale brown silt loam and silty clay loam
42 to 66 inches—very pale brown and pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Ridges of buttes and basalt plains

Contrasting Inclusions

• Ruckles very stony silt loam near the areas of Rock outcrop (5 percent)
• Perla silt loam in smooth, convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Rock outcrop and hazard of water erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, and corn for silage
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the areas of Rock outcrop and the depth to the hardpan in the Kinzie soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• The risk of water erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the areas of Rock outcrop and the depth to the hardpan in the Kinzie soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• The risk of water erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Construction of fences, excavation for stock water pipelines, and distribution of livestock are limited by the areas of Rock outcrop and the depth to the hardpan in the Kinzie soil.
• Reseeding is limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Kinzie and Marley soils—010AY026ID Loamy 11-13 ARTRW8/PSSP6

104—Lava flows

Composition

Lava flows—90 percent
Contrasting inclusions—10 percent

Setting

Location in survey area: Central and north-central parts
Position on landscape: All positions

Characteristics of the Lava Flows

Description of areas: Barren basaltic flows associated with recent volcanic activity typified by the Craters of the Moon National Monument; common pressure ridges, fissures, and collapsed lava tubes
Vegetation: None or very little

Contrasting Inclusions

• Shallow or very shallow soils that are in nearly level positions

Major Use

Wildlife habitat for small mammals and birds

Interpretive Groups

Capability classification: VIII

105—Lava flows-Cinderhurst complex, 2 to 15 percent slopes

Composition

Lava flows—70 percent
Cinderhurst extremely cobbly silt loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,600 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Lava Flows

Description of areas: Barren flows of basalt associated with recent volcanic activity and typified by the Craters of the Moon National Monument
Common features: Pressure ridges, fissures, and lava tubes
Position on landscape: All positions

Characteristics of the Cinderhurst Soil

Position on landscape: Concave and nearly level areas on basalt plains
Typical profile:
1 inch to 0—undecomposed and partially decomposed plant litter
0 to 3 inches—brown extremely cobbly silt loam
3 to 8 inches—dark yellowish brown extremely cobbly silt loam
8 inches—basalt
Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 4 to 10 inches
Runoff: Slow to rapid

Contrasting Inclusions

• Soils that are similar to the Cinderhurst soil but are 10 to 40 inches deep to bedrock and are in depressions (10 percent)

Use and Management

Major use: Rangeland (fig. 12)
Major management factors: Depth to bedrock, very low available water capacity, and Lava flows

Rangeland

Dominant vegetation in potential natural plant community: Cinderhurst soil—mountain big sagebrush and Nevada bluegrass

Figure 12.—Rangeland in an area of Lava flows-Cinderhurst complex, 2 to 15 percent slopes.

Major management considerations:
- The very low available water capacity limits the selection of species suitable for seeding.
- Seeding and mechanical treatment are limited by the areas of Lava flows.
- Construction of fences and distribution of livestock are limited by the very shallow depth to bedrock in the Cinderhurst soil and the areas of Lava flows.

Interpretive Groups

Capability classification: VIIs, nonirrigated

Range site: Cinderhurst soil—010AY020ID Mixed Shrub 12-16 ARTRV/POSE

106—Lava flows-Lithic Torriorthents complex, 2 to 8 percent slopes

Composition

Lava flows—70 percent
Lithic Torriorthents very cobbly silt loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Lava Flows

Description of areas: Barren flows of basalt associated with recent volcanic activity and typified by the Craters of the Moon National Monument
Common features: Pressure ridges, fissures, and sinkholes
Position on landscape: All positions

Characteristics of the Lithic Torriorthents

Position on landscape: Depressions in basalt plains
Example profile:
0 to 2 inches—brown very cobbly silt loam
2 to 9 inches—yellowish brown cobbly silt loam
9 inches—basalt
Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 4 to 10 inches
Runoff: Slow

Contrasting Inclusions

• Soils that are similar to the Lithic Torriorthents but are 20 to 40 inches deep and are in fractures of Lava flows (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Depth to bedrock, Lava flows, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Lithic Torriorthents—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding and mechanical treatment are limited by the very shallow depth to bedrock.
• The very low available water capacity limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the very shallow depth to bedrock and the areas of Lava flows.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Lithic Torriorthents—011AY002ID Shallow Loamy 8-12 ARTRW8/PSSP6

107—Little Wood sandy loam, 6 to 30 percent slopes

Composition

Little Wood sandy loam and similar inclusions—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,800 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Little Wood Soil

Position on landscape: Dissected alluvial terraces
Typical profile:
0 to 10 inches—dark brown sandy loam
10 to 24 inches—light yellowish brown very gravelly sandy clay loam
24 to 60 inches—brown extremely gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid below
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Sand, gravel, and cobbles at a depth of 24 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Skelter very gravelly loam on concave, north-facing sides slopes and toeslopes (10 percent)
• Simonton loam on north-facing side slopes (10 percent)

Use and Management

Major use: Rangeland
Major management factor: Hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth

of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: 010AY022ID Loamy 12-16 ARTRT/PSSP6

108—Lobeisner silt loam, 1 to 3 percent slopes

Composition

Lobeisner silt loam and similar inclusions—75 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,200 to 4,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 100 days

Characteristics of the Lobeisner Soil

Position on landscape: Toeslopes, drainageways, and basins on buttes
Typical profile:
0 to 5 inches—brown silt loam
5 to 17 inches—yellowish brown silt loam
17 to 45 inches—pale brown and very pale brown silt loam
45 to 58 inches—yellowish brown loam
58 to 68 inches—yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Contrasting Inclusions

- Marley silt loam in convex positions (10 percent)
- Quencheroo silt loam near drainageways (10 percent)
- Soils that are similar to Bahem soils but have a silt loam surface layer and have slopes of 2 to 6 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, and corn for silage
Major management considerations:
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIe, irrigated

109—Marley silt loam, 1 to 4 percent slopes

Composition

Marley silt loam and similar inclusions—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,200 to 4,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Marley Soil

Position on landscape: Smooth and concave areas on buttes and basalt plains
Typical profile:
0 to 8 inches—grayish brown and brown silt loam
8 to 12 inches—yellowish brown silty clay loam
12 to 29 inches—yellowish brown silty clay loam
29 to 42 inches—pale brown and very pale brown silty clay loam
42 to 66 inches—very pale brown and pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches

Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Kinzie silt loam near areas of Rock outcrop and in drainageways (5 percent)
- Darrah silt loam in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factor: Hazard of water erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes for seed, and corn for silage
Major management considerations:
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

110—Marley-Kinzie complex, 1 to 4 percent slopes

Composition

Marley silt loam and similar inclusions—65 percent
Kinzie silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 4,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Marley Soil

Position on landscape: Smooth and concave areas on buttes and basalt plains
Typical profile:
0 to 8 inches—grayish brown and brown silt loam
8 to 12 inches—yellowish brown silt loam
12 to 29 inches—yellowish brown silty clay loam
29 to 42 inches—pale brown and very pale brown silty clay loam
42 to 66 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Kinzie Soil

Position on landscape: Ridges and near areas of Rock outcrop on basalt plains and buttes
Typical profile:
0 to 6 inches—brown and yellowish brown silt loam
6 to 23 inches—yellowish brown and light yellowish brown silty clay loam
23 to 27 inches—very pale brown silt loam
27 to 38 inches—pinkish white silty clay loam
38 to 47 inches—pinkish white, lime- and silica-cemented hardpan
47 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 21 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Ruckles very stony silt loam near areas of Rock outcrop (10 percent)
- Darrah silt loam in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of water erosion and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes for seed, and corn for silage
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Distribution of livestock and installation of stock water pipelines are limited by the depth to the hardpan in the Kinzie soil.
• The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Marley and Kinzie soils—010AY026ID Loamy 11-13 ARTRW8/PSSP6

111—Marley-Kinzie complex, 4 to 8 percent slopes

Composition

Marley silt loam and similar inclusions—50 percent
Kinzie silt loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,700 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Marley Soil

Position on landscape: Smooth, concave areas and most convex areas on buttes and basalt plains
Typical profile:
0 to 8 inches—grayish brown and brown silt loam
8 to 12 inches—yellowish brown silty clay loam
12 to 29 inches—yellowish brown silty clay loam
29 to 42 inches—pale brown and very pale brown silty clay loam
42 to 66 inches—very pale brown and pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Kinzie Soil

Position on landscape: Ridges and near areas of Rock outcrop on basalt plains and buttes
Typical profile:
0 to 6 inches—brown and yellowish brown silt loam
6 to 23 inches—yellowish brown and light yellowish brown silty clay loam
23 to 27 inches—very pale brown silty clay loam
27 to 38 inches—pinkish white silty clay loam
38 to 47 inches—pinkish white, lime- and silica-cemented hardpan
47 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate

Potential rooting depth: 21 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Rock outcrop on ridges (5 percent)
- Ruckles very stony silt loam near areas of Rock outcrop (5 percent)
- Darrah silt loam in concave positions (5 percent)
- Perla silt loam in smooth, convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of water erosion and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes for seed, and corn for silage
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Kinzie soil.
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
- Distribution of livestock and installation of stock water pipelines are limited by the depth to the hardpan in the Kinzie soil.
- The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Marley and Kinzie soils—010AY026ID Loamy 11-13 ARTRW8/PSSP6

112—Marley-Schnipper complex, 1 to 4 percent slopes

Composition

Marley very fine sandy loam and similar inclusions—60 percent
Schnipper fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 4,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Marley Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 11 inches—brown or grayish brown very fine sandy loam
11 to 19 inches—yellowish brown silt loam
19 to 24 inches—pale brown silty clay loam
24 to 43 inches—light yellowish brown silty clay loam
43 to 47 inches—white loam
47 to 66 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 41 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 47 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Schnipper Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 8 inches—brown fine sandy loam
8 to 12 inches—dark yellowish brown fine sandy loam
12 to 16 inches—yellowish brown clay loam
16 to 29 inches—very pale brown fine sandy loam and light gray loam
29 to 58 inches—white, lime- and silica-cemented hardpan
58 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Burch loam in drainageways (10 percent)
• Bruncan stony loam that has slopes of 5 to 15 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a cemented hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, potatoes for seed, and corn for silage
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Schnipper soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Schnipper soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

113—McCarey-Beartrap complex, 1 to 6 percent slopes

Composition

McCarey loam and similar inclusions—45 percent
Beartrap loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,700 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the McCarey Soil

Position on landscape: Intermound areas on basalt plains
Typical profile:
0 to 11 inches—brown loam
11 to 18 inches—brown clay loam
18 to 23 inches—brown loam
23 to 28 inches—white silt loam
28 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Beartrap Soil

Position on landscape: Mounds on basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 16 inches—brown loam
16 to 19 inches—light yellowish brown fine sandy loam
19 to 43 inches—light gray fine sandy loam

43 to 52 inches—white fine sandy loam
52 inches—basalt

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Soils that are similar to the McCarey soil but are less than 20 inches deep to bedrock and are on ridges (10 percent)
- Molyneux loam in depressions (5 percent)
- Rock outcrop on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McCarey soil—Wyoming big sagebrush and bluebunch wheatgrass; Beartrap soil—basin big sagebrush and basin wildrye
Major management considerations:

- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The low available water capacity of the McCarey soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: McCarey soil—011BY010ID Loamy 12-16 ARTRW8/PSSP6; Beartrap soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

114—McCarey-Beartrap complex, 6 to 20 percent slopes

Composition

McCarey loam and similar inclusions—55 percent
Beartrap loam and similar inclusions—20 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,800 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the McCarey Soil

Position on landscape: Intermound areas on buttes
Typical profile:
0 to 11 inches—brown loam
11 to 18 inches—brown clay loam
18 to 23 inches—brown loam
23 to 28 inches—white silt loam
28 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Beartrap Soil

Position on landscape: Mounds 10 to 30 feet in diameter and 20 to 80 feet apart on basalt plains
Typical profile:
0 to 16 inches—brown loam
16 to 19 inches—light yellowish brown fine sandy loam
19 to 43 inches—light gray fine sandy loam
43 to 52 inches—white fine sandy loam
52 inches—basalt

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Soils that are similar to the McCarey soil but have a stony loam surface layer and are in eroded areas (10 percent)
- Rock outcrop on ridges and tops of buttes (10 percent)
- Soils that are similar to the McCarey soil but are less than 20 inches deep to bedrock and are on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McCarey soil—Wyoming big sagebrush and bluebunch wheatgrass; Beartrap soil—basin big sagebrush and basin wildrye

Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the McCarey soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: McCarey soil—011BY010ID Loamy 12-16 ARTRW8/PSSP6; Beartrap soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

115—McCarey-Beartrap-Rock outcrop complex, 2 to 15 percent slopes

Composition

McCarey loam and similar inclusions—40 percent
Beartrap loam and similar inclusions—30 percent
Rock outcrop—25 percent
Contrasting inclusions—5 percent

Setting

Elevation: 4,700 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the McCarey Soil

Position on landscape: Intermound areas on basalt plains
Typical profile:
0 to 11 inches—brown loam
11 to 18 inches—brown clay loam
18 to 23 inches—brown loam
23 to 28 inches—white silt loam
28 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Beartrap Soil

Position on landscape: Mounds 10 to 30 feet in diameter and 20 to 50 feet apart on basalt plains
Typical profile:
0 to 16 inches—brown loam
16 to 19 inches—light yellowish brown fine sandy loam
19 to 43 inches—light gray fine sandy loam
43 to 52 inches—white fine sandy loam
52 inches—basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Ridges

Contrasting Inclusions

• Soils that are similar to the McCarey soil but are less than 20 inches deep to bedrock and are on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: McCarey soil—Wyoming big sagebrush and bluebunch wheatgrass; Beartrap soil—basin big sagebrush and basin wildrye
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the McCarey soil limits the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: McCarey soil—011BY010ID Loamy 12-16 ARTRW8/PSSP6; Beartrap soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

116—McCarey-Molyneux-Rock outcrop complex, 2 to 15 percent slopes

Composition

McCarey loam and similar inclusions—40 percent
Molyneux loam and similar inclusions—25 percent

Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,800 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the McCarey Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 11 inches—brown loam
11 to 18 inches—brown clay loam
18 to 23 inches—brown loam
23 to 28 inches—white silt loam
28 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Molyneux Soil

Position on landscape: Drainageways in basalt plains
Slope: 2 to 8 percent
Typical profile:
0 to 7 inches—brown loam
7 to 13 inches—yellowish brown loam
13 to 25 inches—pale brown clay loam
25 to 48 inches—light yellowish brown loam
48 to 62 inches—very pale brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Pressure ridges

Contrasting Inclusions

• Soils that are similar to the McCarey soil but are less than 20 inches deep to bedrock and are on ridges (10 percent)
• Beartrap loam on mounds 10 to 30 feet in diameter (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McCarey soil—Wyoming big sagebrush and bluebunch wheatgrass; Molyneux soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the McCarey soil limits the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: McCarey soil—011BY010ID Loamy 12-16 ARTRW8/PSSP6; Molyneux soil—010AY022ID Loamy 12-16 ARTRT/PSSP6

117—McCarey-Pedleford complex, 8 to 20 percent slopes

Composition

McCarey loam and similar inclusions—55 percent
Pedleford very stony loam and similar inclusions—30 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,700 to 5,400 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the McCarey Soil

Position on landscape: Convex side slopes of basalt buttes
Typical profile:
0 to 11 inches—brown loam
11 to 18 inches—brown clay loam
18 to 23 inches—brown loam
23 to 28 inches—white silt loam
28 inches—basalt
Depth class: Moderately deep

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Pedleford Soil

Position on landscape: Near areas of Rock outcrop and on ridges on buttes
Typical profile:
0 to 6 inches—brown very stony loam
6 to 11 inches—brown very stony loam
11 to 26 inches—pale brown very stony loam
26 to 34 inches—very pale brown very stony silt loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Molyneux loam in concave positions (10 percent)
• Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McCarey soil—Wyoming big sagebrush and bluebunch wheatgrass; Pedleford soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McCarey soil—011BY010ID Loamy 12-16 ARTRW8/PSSP6; Pedleford soil—010AY022ID Loamy 12-16 ARTRT/PSSP6

118—McHandy-Catchell-Chilcott complex, 1 to 8 percent slopes

Composition

McHandy silty clay loam and similar inclusions—50 percent
Chilcott very stony silt loam and similar inclusions—20 percent
Catchell silt loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the McHandy Soil

Position on landscape: Smooth areas on basalt plateaus
Typical profile:
0 to 4 inches—light brown silty clay loam
4 to 18 inches—light brown silty clay
18 to 32 inches—light brown silty clay
32 to 40 inches—pink silty clay loam
40 to 60 inches—pink, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Catchell Soil

Position on landscape: Slightly convex areas on basalt plateaus
Typical profile:
0 to 2 inches—light gray silt loam
2 to 3 inches—pale brown silt loam
3 to 18 inches—yellowish brown silty clay
18 to 22 inches—yellowish brown silty clay loam
22 to 36 inches—very pale brown, lime- and silica-cemented hardpan
36 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low

Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe

Characteristics of the Chilcott Soil

Position on landscape: Drainageways in basalt plateaus
Typical profile:
0 to 13 inches—brown very stony silt loam
13 to 28 inches—yellowish brown silty clay
28 to 31 inches—very pale brown, weakly cemented loam
31 to 60 inches—pinkish white, lime- and silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

• Power silt loam on mounds (5 percent)
• Soils that are similar to the Chilcott soil but have an extremely stony silt loam surface layer and are in drainageways (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very slow and slow permeability, shrink-swell potential, low available water capacity, and hazard of erosion

Rangeland

Dominant vegetation in potential natural plant community: McHandy soil—Wyoming big sagebrush and bluebunch wheatgrass; Catchell soil—Wyoming big sagebrush and bluebunch wheatgrass; Chilcott soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• The high shrink-swell potential of the McHandy soil limits the selection of species suitable for seeding.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the Chilcott and Catchell soils limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McHandy soil—011AY010ID Churning Clay 8-12 ARTRW8/PSSP6; Catchell soil—011AY005ID Claypan 8-12 ARTRW8/PSSP6; Chilcott soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

119—McHandy-Hobby-Rubbleland complex, 4 to 30 percent slopes

Composition

McHandy very stony silty clay loam and similar inclusions—35 percent
Hobby extremely stony silty clay and similar inclusions—25 percent
Rubbleland—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,700 to 4,400 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the McHandy Soil

Position on landscape: Lower part of fault escarpments on basalt plateaus
Typical profile:
0 to 9 inches—brown very stony silty clay loam
9 to 26 inches—light brown silty clay
26 to 46 inches—pinkish gray silty clay loam
46 to 60 inches—silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 46 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Hobby Soil

Position on landscape: Upper part of fault escarpments on basalt plateaus

Typical profile:
0 to 4 inches—very dark grayish brown extremely stony silty clay
4 to 17 inches—dark brown silty clay
17 to 21 inches—dark brown very cobbly clay
21 to 27 inches—highly weathered basalt
27 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rubbleland

Kind of material: Basalt boulders and stones
Position on landscape: Downslope from included areas of Rock outcrop near tops of fault scarps

Contrasting Inclusions

• Soils that are similar to the Hobby soil but are shallow to bedrock and are in convex positions (10 percent)
• Rock outcrop scattered throughout (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Rubbleland, stones in the surface layer, very slow permeability, shrink-swell potential, hazard of water erosion, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McHandy soil—Wyoming big sagebrush and bluebunch wheatgrass; Hobby soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the areas of Rubbleland and the stones in the surface layer.
• The high shrink-swell potential and low available water capacity of the Hobby soil limit the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the areas of Rubbleland.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: McHandy soil—011AY010ID Churning Clay 8-12 ARTRW8/PSSP6; Hobby soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

120—McHandy-Thorncreek complex, 1 to 6 percent slopes

Composition

McHandy silty clay loam and similar inclusions—45 percent
McHandy very stony silty clay loam and similar inclusions—20 percent
Thorncreek extremely cobbly silty clay loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,600 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the McHandy Soil

Position on landscape: Mounds and interfluves on basalt plateaus
Typical profile:
0 to 2 inches—pale brown silty clay loam
2 to 19 inches—yellowish brown silty clay loam
19 to 53 inches—yellowish brown silty clay
53 to 60 inches—pink, silica-cemented hardpan

Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 53 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the McHandy Soil, Stony

Position on landscape: Midslopes on basalt plateaus
Typical profile:
0 to 9 inches—brown very stony silty clay loam
9 to 26 inches—light brown silty clay

26 to 36 inches—pinkish gray silty clay loam
36 to 46 inches—weakly silica-cemented, pink loam
46 to 60 inches—silica-cemented hardpan

Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 46 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Thorncreek Soil

Position on landscape: Drainageways in basalt plateaus
Typical profile:
0 to 3 inches—dark grayish brown extremely cobbly silty clay loam
3 to 8 inches—dark brown silty clay loam
8 to 29 inches—dark brown silty clay
29 to 37 inches—light brown silty clay loam
37 to 41 inches—pink very cobbly loam
41 inches—basalt

Depth class: Deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to the Thorncreek soil but are shallow to bedrock and are in eroded drainageways (10 percent)
• Rock outcrop in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Shrink-swell potential, very slow permeability, hazard of water erosion, and stones on the surface

Rangeland

Dominant vegetation in potential natural plant community: McHandy soils—Wyoming big sagebrush and bluebunch wheatgrass; Thorncreek soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the stones on the surface of the McHandy soil, stony.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The high shrink-swell potential limits the selection of species suitable for seeding.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: McHandy soils—011AY010ID Churning Clay 8-12 ARTRW8/PSSP6; Thorncreek soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

121—McPan-Chijer complex, 1 to 6 percent slopes

Composition

McPan silt loam and similar inclusions—50 percent
Chijer silt loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the McPan Soil

Position on landscape: Smooth and convex areas on basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Chijer Soil

Position on landscape: Mounds on basalt plains
Slope: 1 to 4 percent
Typical profile:
0 to 7 inches—brown and pale brown silt loam
7 to 14 inches—light yellowish brown silt loam
14 to 64 inches—very pale brown and pale brown silt loam and loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Starbuck silt loam on ridges (10 percent)
• Taunton silt loam on convex side slopes (5 percent)
• Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the McPan soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McPan and Chijer soils—011AY004ID Loamy 8-12 ARTRW8/PSSP6

122—McPan-Power complex, 1 to 3 percent slopes

Composition

McPan silt loam and similar inclusions—55 percent
Power silt loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,500 to 4,450 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the McPan Soil

Position on landscape: Slightly convex areas on basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Characteristics of the Power Soil

Position on landscape: Concave areas where runoff accumulates on basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 38 inches—yellowish brown silt loam
38 to 64 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Starbuck silt loam that has slopes of 2 to 5 percent (10 percent)
• Rock outcrop on pressure ridges (5 percent)
• Soils that are similar to Starbuck very cobbly silt loam but are near areas of Rock outcrop and have slopes of 3 to 5 percent (3 percent)
• McPan silt loam that has slopes of 3 to 5 percent (2 percent)

Use and Management

Major uses: Cropland, hayland, and pasture
Major management factors: Depth to a hardpan and to bedrock and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, corn, sugar beets, dry beans, and potatoes
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the McPan soil.
• Suitable management practices are needed to overcome the low available water capacity of the McPan soil.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the McPan soil.
• Suitable management practices are needed to overcome the low available water capacity of the McPan soil.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

123—McPan-Power-Rock outcrop complex, 1 to 6 percent slopes

Composition

McPan silt loam and similar soils—40 percent
Power silt loam and similar soils—35 percent
Rock outcrop—15 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the McPan Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 6 inches—pale brown and yellowish brown silt loam
6 to 19 inches—yellowish brown silt loam
19 to 26 inches—light yellowish brown and pale brown silt loam
26 to 30 inches—white, lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Characteristics of the Power Soil

Position on landscape: Concave areas on basalt plains and buttes
Slope: 1 to 4 percent
Typical profile:
0 to 6 inches—brown silt loam
6 to 10 inches—brown silt loam
10 to 23 inches—yellowish brown silt loam
23 to 29 inches—pale brown silt loam
29 to 40 inches—very pale brown silt loam
40 to 64 inches—very pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Convex areas and pressure ridges

Contrasting Inclusions

• Starbuck silt loam on ridges and near areas of Rock outcrop (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, hazard of water erosion, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McPan soil—Wyoming big sagebrush and bluebunch wheatgrass; Power soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The low available water capacity of the McPan soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Power soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

124—McPan-Rock outcrop complex, 1 to 6 percent slopes

Composition

McPan and similar inclusions—45 percent
Rock outcrop—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the McPan Soil

Position on landscape: Basalt plains and buttes
Typical profile:
0 to 6 inches—pale brown and yellowish brown silt loam
6 to 19 inches—yellowish brown silt loam
19 to 26 inches—light yellowish brown and pale brown silt loam
26 to 30 inches—white, lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Convex areas and pressure ridges

Contrasting Inclusions

• Power silt loam and similar soils that are 40 to 60 inches deep to bedrock and are in drainageways (10 percent)
• Starbuck silt loam in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, Rock outcrop, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: McPan soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

125—McPan-Starbuck complex, 1 to 4 percent slopes

Composition

McPan silt loam and similar inclusions—45 percent

Starbuck silt loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,000 to 4,450 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the McPan Soil

Position on landscape: Smooth, concave areas between ridges on basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Characteristics of the Starbuck Soil

Position on landscape: Convex areas and side slopes of ridges on basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 16 inches—yellowish brown silt loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to Power silt loam but are deep to bedrock and are in basins (10 percent)
• Rock outcrop on basalt pressure ridges (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Depth to bedrock, hazard of water erosion, and low and very low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, and sugar beets
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the McPan and Starbuck soils and the depth to the hardpan in the McPan soil.
• The Starbuck soil is poorly suited to use as cropland because of the shallow depth to bedrock.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the McPan and Starbuck soils and the depth to the hardpan in the McPan soil.
• The Starbuck soil is poorly suited to use as hayland and pasture because of the shallow depth to bedrock.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include furrow, corrugation, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated

126—McPan-Starbuck complex, 4 to 20 percent slopes

Composition

McPan silt loam and similar soils—45 percent
Starbuck very cobbly silt loam and similar soils—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the McPan Soil

Position on landscape: Concave side slopes of basalt plains and buttes
Typical profile:
0 to 6 inches—pale brown and yellowish brown silt loam
6 to 19 inches—yellowish brown silt loam
19 to 26 inches—light yellowish brown and pale brown silt loam
26 to 30 inches—white, lime- and silica-cemented hardpan
30 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Characteristics of the Starbuck Soil

Position on landscape: Convex ridges on basalt buttes
Typical profile:
0 to 2 inches—light brownish gray very cobbly silt loam
2 to 5 inches—brown silt loam
5 to 12 inches—yellowish brown silt loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

- Purdam silt loam in concave positions (5 percent)
- Power silt loam in concave positions (5 percent)
- Rock outcrop on pressure ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, low and very low available water capacity, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil.
- The very low and low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Starbuck soil—011AY002ID Shallow Loamy 8-12 ARTRW8/PSSP6

127—Minveno loam, 1 to 4 percent slopes

Composition

Minveno silt loam—80 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,200 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Minveno Soil

Position on landscape: Ridges on basalt buttes
Typical profile:
0 to 4 inches—pale brown loam
4 to 7 inches—pale brown silt loam
7 to 12 inches—very pale brown loam
12 to 37 inches—white, lime- and silica-cemented hardpan
37 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 12 inches
Runoff: Slow

Contrasting Inclusions

- Idow loam on side slopes (10 percent)
- Taunton loam that has a calcareous surface layer

and is on side slopes near eroded ridges (5 percent)
• Elijah silt loam on side slopes near basins (5 percent)

Use and Management

Major uses: Rangeland, cropland, hayland, and pasture
Major management factors: Depth to bedrock and to a hardpan, very low available water capacity, and carbonate-induced nutrient deficiencies

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and Thurber needlegrass.
Major management considerations:
• Distribution of livestock and construction of fences and stock water pipelines are limited by the depth to the hardpan.

Cropland

Commonly grown crops: Irrigated wheat and barley
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock.
• Suitable management practices are needed to overcome the very low available water capacity and the carbonate-induced nutrient deficiencies.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock.
• Suitable management practices are needed to overcome the very low available water capacity and the carbonate-induced nutrient deficiencies.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: 011XY003ID Loamy 7-10 ARTRW8/ACTH7

128—Molyneux-Moreglade complex, 12 to 40 percent slopes

Composition

Molyneux loam and similar inclusions—70 percent
Moreglade extremely bouldery loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,200 to 5,800 feet
Aspect: North and east
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days

Characteristics of the Molyneux Soil

Position on landscape: Canyonsides
Slope: 20 to 35 percent
Typical profile:
0 to 4 inches—dark brown loam
4 to 15 inches—brown cobbly loam
15 to 24 inches—dark yellowish brown cobbly clay loam
24 to 35 inches—brown gravelly clay loam
35 to 50 inches—strong brown clay loam
50 to 60 inches—brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Moreglade Soil

Position on landscape: Canyonsides
Typical profile:
0 to 4 inches—dark brown extremely bouldery loam
4 to 10 inches—dark brown cobbly loam
10 to 60 inches—yellowish brown and brown very cobbly clay loam and very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Rubbleland in convex positions (5 percent)
- Fergie gravelly loam on ridges (5 percent)
- Gaibson very gravelly loam on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, and boulders in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and by the boulders in the surface layer of the Moreglade soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Molyneux soil—010AY004ID Loamy 12-16 ARTRV/FEID; Moreglade soil—010AY037ID Shrubby Stony North 12-16 ARTRV/FEID

129—Molyneux-Skelter-Stash association, 20 to 60 percent slopes

Composition

Molyneux loam and similar inclusions—50 percent
Skelter gravelly loam and similar inclusions—20 percent
Stash very stony clay loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Characteristics of the Molyneux Soil

Position on landscape: Concave areas on canyonsides
Slope: 20 to 35 percent
Elevation: 5,000 to 5,800 feet
Aspect: North and east
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days
Typical profile:
0 to 4 inches—dark brown loam
4 to 15 inches—brown cobbly loam
15 to 24 inches—dark yellowish brown cobbly clay loam
24 to 35 inches—brown cobbly clay loam
35 to 50 inches—strong brown clay loam
50 to 60 inches—brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Skelter Soil

Position on landscape: Smooth and convex areas on canyonsides
Elevation: 5,000 to 5,800 feet
Aspect: South and west
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days
Typical profile:
0 to 10 inches—dark grayish brown gravelly loam
10 to 27 inches—grayish brown and brown gravelly sandy clay loam
27 to 38 inches—yellowish brown sandy clay loam
38 to 60 inches—light yellowish brown, stratified sandy loam to extremely gravelly fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified sandy loam to extremely gravelly fine sandy loam at a depth of 38 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Stash Soil

Position on landscape: Slump blocks and structural benches on toeslopes of canyonsides
Slope: 20 to 30 percent
Elevation: 5,000 to 5,800 feet
Aspect: All directions
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days
Typical profile:
0 to 11 inches—dark grayish brown extremely stony clay loam
11 to 41 inches—yellowish brown very cobbly clay
41 to 48 inches—light yellowish brown very cobbly loam

48 to 62 inches—light yellowish brown very cobbly loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

• Rubbleland on the upper slopes and midslopes and Rock outcrop near canyon rims (10 percent)
• Moreglade extremely bouldery loam on the upper slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, steep slopes, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Molyneux soil—mountain big sagebrush and Idaho fescue; Skelter soil—mountain big sagebrush and bluebunch wheatgrass; Stash soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes of the Molyneux and Skelter soils and the stones in the surface layer of the Stash soil.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Molyneux soil—010AY004ID Loamy 12-16 ARTRV/FEID; Skelter soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Stash soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

130—Moreglade-Fergie association, 30 to 50 percent slopes

Composition

Moreglade extremely bouldery loam and similar inclusions—40 percent
Fergie very gravelly loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Characteristics of the Moreglade Soil

Position on landscape: Canyonsides, and north- and east-facing side slopes and the upper part of south- and west-facing side slopes near areas of Rock outcrop on foothills
Elevation: 4,900 to 5,700 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days
Typical profile:
0 to 4 inches—dark brown extremely bouldery loam
4 to 10 inches—dark brown cobbly loam
10 to 60 inches—yellowish brown and brown very cobbly clay loam and very cobbly loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Fergie Soil

Position on landscape: Canyonsides, and south- and west-facing side slopes and the lower part of north- and east-facing side slopes on foothills
Elevation: 4,900 to 5,700 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days
Typical profile:
0 to 9 inches—brown very gravelly loam
9 to 26 inches—yellowish brown very gravelly loam
26 to 49 inches—light yellowish brown extremely gravelly sandy clay loam
49 inches—highly fractured basalt

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

• Duguesclin very cobbly clay loam on benches and toeslopes (10 percent)
• Rubbleland on steep side slopes (10 percent)
• Rock outcrop on steep side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, and boulders in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Moreglade soil—mountain big sagebrush and Idaho fescue; Fergie soil—mountain big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and by the boulders in the surface layer of the Moreglade soil.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Moreglade soil—010AY037ID Shrubby Stony North 12-16 ARTRV/FEID; Fergie soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6

131—Moreglade-Molyneux-Stash complex, 20 to 50 percent slopes

Composition

Moreglade extremely bouldery loam and similar inclusions—40 percent
Molyneux loam and similar inclusions—30 percent
Stash very stony clay loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,700 to 5,400 feet
Aspect: North and east
Average annual precipitation: About 16 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 70 days

Characteristics of the Moreglade Soil

Position on landscape: Upper part of canyonsides
Slope: 30 to 50 percent
Typical profile:
0 to 4 inches—dark brown extremely bouldery loam
4 to 10 inches—dark brown cobbly loam
10 to 60 inches—yellowish brown and brown very cobbly clay loam and very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Molyneux Soil

Position on landscape: Toeslopes of canyonsides
Slope: 20 to 35 percent
Typical profile:
0 to 4 inches—dark brown loam
4 to 15 inches—brown cobbly loam
15 to 24 inches—dark yellowish brown cobbly clay loam
24 to 35 inches—brown gravelly clay loam
35 to 50 inches—strong brown clay loam
50 to 60 inches—brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Stash Soil

Position on landscape: Slump blocks and structural benches on toeslopes of canyonsides
Slope: 20 to 30 percent
Typical profile:
0 to 11 inches—dark grayish brown extremely stony clay loam
11 to 41 inches—yellowish brown very cobbly clay
41 to 48 inches—light yellowish brown very cobbly loam
48 to 62 inches—light yellowish brown very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Rubbleland on upper slopes and midslopes (10 percent)
• Rock outcrop near canyon rims (5 percent)

Use and Management

Major use: Rangeland

Major management factors: Steep slopes, stones and boulders in the surface layer, and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Moreglade and Molyneux soils—mountain big sagebrush and Idaho fescue; Stash soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes of the Moreglade and Molyneux soils and the stones and boulders in the surface layer of the Moreglade and Stash soils.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Moreglade soil—010AY037ID Shrubby Stony North 12-16 ARTRV/FEID; Molyneux soil—010AY004ID Loamy 12-16 ARTRV/FEID; Stash soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

132—Mug-Polecreek-Rock outcrop complex, 1 to 12 percent slopes

Composition

Mug extremely stony loam and similar inclusions—55 percent
Polecreek very cobbly silt loam and similar inclusions—15 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 85 days

Characteristics of the Mug Soil

Position on landscape: Convex areas on basalt plains
Parent material: Young loess over weathered loess and residuum
Typical profile:
0 to 8 inches—dark grayish brown and brown extremely stony loam
8 to 16 inches—brown extremely cobbly silty clay
16 to 24 inches—yellowish brown extremely cobbly silty clay loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Polecreek Soil

Position on landscape: Eroded drainageways and ridges on basalt plains
Parent material: Young loess over weathered loess and residuum
Typical profile:
0 to 8 inches—dark grayish brown very cobbly silt loam
8 to 16 inches—brown extremely cobbly clay loam
16 inches—fractured basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 10 to 20 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristic of the Rock outcrop

Kind of material: Basalt
Position on landscape: Convex areas

Contrasting Inclusions

• Soils that are similar to Starhope silt loam but are very deep and are in drainageways and basins (15 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, stones in the surface layer, hazard of water erosion, low available water capacity, and depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Mug soil—mountain big sagebrush and Idaho fescue; Polecreek soil—alkali sagebrush and Idaho fescue
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

- Seeding and mechanical treatment are limited by the stones in the surface layer.
- The low available water capacity limits the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Polecreek soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Mug soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID; Polecreek soil—010AY001ID Stony Clay 12-16 ARARL/FEID

133—Mulshoe-Rock outcrop-Elkcreek complex, 12 to 35 percent slopes

Composition

Mulshoe extremely bouldery loam and similar inclusions—40 percent
Rock outcrop—20 percent
Elkcreek loam and similar inclusions—15 percent
Contrasting inclusions—25 percent

Setting

Aspect: South and west
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 43 degrees F
Frost-free period: About 75 days

Characteristics of the Mulshoe Soil

Position on landscape: Side slopes of foothills
Typical profile:
0 to 10 inches—very dark grayish brown and dark brown extremely bouldery loam
10 to 38 inches—brown very stony clay loam
38 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Characteristics of the Rock Outcrop

Kind of rock: Rhyolitic welded tuff
Description of areas: Rounded, linear outcroppings oriented perpendicular to the slopes

Characteristics of the Elkcreek Soil

Position on landscape: Concave side slopes of foothills
Slope: 12 to 25 percent
Typical profile:
0 to 10 inches—brown loam
10 to 26 inches—brown clay loam
26 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

- Fergie gravelly loam on concave side slopes (10 percent)
- Terracecreek very gravelly loam in convex positions (10 percent)
- Gaibson gravelly coarse sandy loam on ridges and structural benches (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, very low and low available water capacity, steep slopes, Rock outcrop, and boulders in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Mulshoe soil—mountain big sagebrush and Idaho fescue; Elkcreek soil—mountain big sagebrush and bluebunch wheatgrass
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the areas of Rock outcrop, the steep slopes, and the boulders in the surface layer of the Mulshoe soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very low and low available water capacity limit the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Mulshoe soil—010AY031ID Bouldery Loam

12-16 ARTRV/FEID; Elkcreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6

134—Mulshoe-Simonton-Rock outcrop complex, 12 to 35 percent slopes

Composition

Mulshoe extremely bouldery loam and similar inclusions—40 percent
Simonton loam and similar inclusions—20 percent
Rock outcrop—15 percent
Contrasting inclusions—25 percent

Setting

Aspect: North and east
Elevation: 5,300 to 6,000 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days

Characteristics of the Mulshoe Soil

Position on landscape: Side slopes of foothills
Typical profile:
0 to 10 inches—very dark grayish brown and dark brown extremely bouldery loam
10 to 38 inches—brown very stony clay loam
38 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid or very rapid
Hazard of water erosion: Severe

Characteristics of the Simonton Soil

Position on landscape: Concave side slopes of foothills
Slope: 12 to 30 percent
Typical profile:
0 to 17 inches—dark grayish brown loam
17 to 60 inches—brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Kind of rock: Rhyolitic welded tuff
Description of areas: Rounded, linear outcroppings oriented perpendicular to the slope

Contrasting Inclusions

- Soils that are similar to Moreglade very stony loam but have a loam surface layer and are in concave positions (10 percent)
- Gaibson extremely gravelly coarse sandy loam on benches (5 percent)
- Elkcreek loam on side slopes (5 percent)
- Terracecreek very channery loam on side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, Rock outcrop, boulders in the surface layer, steep slopes, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the areas of Rock outcrop, the steep slopes, and the boulders in the surface layer of the Mulshoe soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
- The very low available water capacity of the Mulshoe soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Mulshoe soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID; Simonton soil—010AY004ID Loamy 12-16 ARTRV/FEID

135—Nammoth-Quiero-Rock outcrop complex, 2 to 35 percent slopes

Composition

Nammoth extremely stony loam and similar inclusions—40 percent
Quiero loam and similar inclusions—30 percent
Rock outcrop—20 percent

Contrasting inclusions—10 percent

Setting

Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Nammoth Soil

Position on landscape: Convex areas near the tops of buttes
Typical profile:
0 to 10 inches—brown extremely stony silt loam
10 to 25 inches—brown very stony clay loam
25 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Characteristics of the Quiero Soil

Position on landscape: Concave areas near the tops of buttes
Slope: 2 to 12 percent
Typical profile:
0 to 7 inches—brown and yellowish brown loam
7 to 21 inches—yellowish brown gravelly clay loam
21 inches—highly weathered, porous basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of rock: Basalt
Position on landscape: Ridges radiating from craters

Contrasting Inclusions

• Rubbleland on ridges (5 percent)
• Ruckles very stony silt loam in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, Rock outcrop, steep slopes, low available water capacity, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Nammoth and Quiero soils—xericensis big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes and stones in the surface layer of the Nammoth soil and by the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Nammoth soil—010AY032ID Bouldery 11-13 ARTRX/PSSP6; Quiero soil—010AY033ID Loamy 11-13 ARTRX/PSSP6

136—Nammoth-Rock outcrop-Quiero complex, 8 to 35 percent slopes

Composition

Nammoth extremely bouldery loam and similar inclusions—55 percent
Rock outcrop—15 percent
Quiero loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Nammoth Soil

Position on landscape: Side slopes and convex areas of foothills
Typical profile:
0 to 8 inches—grayish brown and brown extremely bouldery loam
8 to 13 inches—brown extremely bouldery clay loam
13 to 23 inches—yellowish brown extremely bouldery clay

23 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Moderate to very severe

Characteristics of the Rock Outcrop

Kind of material: Welded tuff
Position on landscape: Hilltops and side slopes

Characteristics of the Quiero Soil

Position on landscape: Structural benches and toeslopes of foothills
Slope: 8 to 15 percent
Typical profile:
0 to 10 inches—grayish brown and brown loam
10 to 14 inches—yellowish brown loam
14 to 36 inches—brown clay loam
36 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

• Ruckles very gravelly loam that has slopes of 1 to 8 percent and is on eroded structural benches (10 percent)
• Darrah silt loam in concave positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, Rock outcrop, steep slopes, low available water capacity, and boulders in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Nammoth and Quiero soils—xericensis big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes, areas of Rock outcrop, and boulders in the surface layer of the Nammoth soil.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.
• The low available water capacity limits the selection of species suitable for seeding.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Nammoth soil—010AY032ID Bouldery 11-13 ARTRX/PSSP6; Quiero soil—010AY033ID Loamy 11-13 ARTRX/PSSP6

137—Nammoth-Ruckles-Rock outcrop complex, 1 to 12 percent slopes

Composition

Nammoth extremely stony silt loam and similar inclusions—55 percent
Ruckles very stony loam and similar inclusions—15 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,700 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Nammoth Soil

Position on landscape: Side slopes and ridges on basalt plains
Typical profile:
0 to 10 inches—brown extremely stony silt loam
10 to 25 inches—brown very stony clay loam
25 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Ruckles Soil

Position on landscape: Eroded drainageways of basalt plains
Slope: 1 to 8 percent
Typical profile:
0 to 8 inches—brown very stony silt loam
8 to 13 inches—yellowish brown very stony silty clay
13 inches—fractured basalt
Depth class: Shallow

Drainage class: Well drained
Permeability: Slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Convex areas and eroded drainageways

Contrasting Inclusions

• Darrah silt loam in drainageways and small basins (10 percent)
• Perla silt loam in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, stones in the surface layer, shallow depth to bedrock, hazard of water erosion, and low and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Nammoth soil—xericensis big sagebrush and bluebunch wheatgrass; Ruckles soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the stones in the surface layer.
• The low and very low available water capacity limit the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Ruckles soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Nammoth soil—010AY032ID Bouldery 11-13 ARTRX/PSSP6; Ruckles soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

138—Pagari-Rehfield complex, 2 to 15 percent slopes

Composition

Pagari very cobbly sandy loam and similar inclusions—45 percent
Rehfield loamy sand and similar inclusions—30 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Pagari Soil

Position on landscape: Convex ridgetops and side slopes of basalt plains
Typical profile:
0 to 17 inches—grayish brown and brown very cobbly sandy loam
17 to 31 inches—yellowish brown extremely cobbly loam
31 to 46 inches—pale brown and very pale brown extremely cobbly loam
46 inches—basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 40 to 60 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Rehfield Soil

Position on landscape: Depressions and drainageways of basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 10 inches—brown loamy sand
10 to 42 inches—yellowish brown sandy loam and sandy clay loam
42 to 67 inches—light yellowish brown loamy sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Rock outcrop on convex ridgetops and escarpments (10 percent)
• Cox very stony sandy loam on ridgetops and near the areas of Rock outcrop (10 percent)
• Soils that are similar to Sidlake fine sandy loam but have a dark-colored surface layer (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Pagari soil—basin big sagebrush and bluebunch wheatgrass; Rehfield soil—basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The very low available water capacity of the Pagari soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Pagari soil—010AY022ID Loamy 12-16 ARTRT/PSSP6; Rehfield soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

139—Paulville loam, 0 to 2 percent slopes

Composition

Paulville loam and similar inclusions—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 2,800 to 3,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 120 days

Characteristics of the Paulville Soil

Position on landscape: Drainageways and concave positions
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 47 inches—light gray and pale brown loam and silt loam
47 to 64 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow

Contrasting Inclusions

• Soils that are similar to the Paulville loam but are somewhat poorly drained and are in depressions (5 percent)
• McPan silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIc, irrigated

140—Paulville-McPan complex, 1 to 6 percent slopes

Composition

Paulville loam and similar inclusions—50 percent
McPan silt loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Paulville Soil

Position on landscape: Depressions and toeslopes of basalt plains
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 47 inches—light gray and pale brown loam and silt loam
47 to 64 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the McPan Soil

Position on landscape: Smooth and concave areas of basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 10 inches—brown silt loam
10 to 20 inches—dark yellowish brown silt loam
20 to 27 inches—very pale brown cobbly loam
27 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 27 inches
Runoff: Medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Darrah silt loam in areas where runoff accumulates (5 percent)
• Starbuck silt loam on convex tops (5 percent)
• Rock outcrop on pressure ridges and side slopes (5 percent)

Geographic Inclusions

• Small area near the boundary between Lincoln and Blaine Counties that consists of soils that have a dark-colored surface layer

Use and Management

Major uses: Rangeland, cropland, hayland, and pasture
Major management factors: Hazard of water erosion, low available water capacity, and depth to a cemented pan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the McPan soil.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the McPan soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Paulville soil—basin big sagebrush and bluebunch wheatgrass; McPan soil—Wyoming big sagebrush and Thurber needlegrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the McPan soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Paulville soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

141—Paulville-McPan-Starbuck complex, 1 to 8 percent slopes

Composition

Paulville loam and similar inclusions—35 percent
McPan silt loam and similar inclusions—25 percent
Starbuck silt loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,400 to 4,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Paulville Soil

Position on landscape: Drainageways and toeslopes of basalt plains
Slope: 1 to 4 percent
Typical profile:
- 0 to 6 inches—brown loam
- 6 to 15 inches—yellowish brown silt loam
- 15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
- 30 to 33 inches—very pale brown silt loam
- 33 to 50 inches—light gray silt loam and pale brown loam
- 50 to 64 inches—brown loamy fine sand

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Characteristics of the McPan Soil

Position on landscape: Smooth and concave areas of basalt plains
Typical profile:
- 0 to 5 inches—brown silt loam
- 5 to 15 inches—yellowish brown silt loam
- 15 to 23 inches—light yellowish brown silt loam
- 23 to 28 inches—very pale brown silt loam
- 28 to 29 inches—white, lime- and silica-cemented hardpan
- 29 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Starbuck Soil

Position on landscape: Convex areas of basalt plains
Typical profile:
- 0 to 3 inches—brown silt loam
- 3 to 14 inches—light yellowish brown silt loam
- 14 inches—basalt

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Rock outcrop on ridges (10 percent)
- Farmell silt loam in areas where runoff accumulates and on playas (10 percent)

Use and Management

Major uses: Cropland, hayland, pasture, and rangeland
Major management factors: Hazard of water erosion, low and very low available water capacity, and depth to a cemented pan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and placement of irrigation ditches are limited by the depth to the cemented pan in the McPan soil and to bedrock in the McPan and Starbuck soils.
- Suitable management practices are needed to overcome the hazard of water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
- The cemented pan and bedrock limit roots and reduce the available water capacity of the McPan and Starbuck soils.
- Excavation for irrigation mainlines and placement of irrigation ditches are limited by the depth to the

cemented pan in the McPan soil and to bedrock in the McPan and Starbuck soils.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Suitable management practices include planned grazing systems and pasture and hayland planting.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Paulville and Starbuck soils—basin big sagebrush and bluebunch wheatgrass; McPan soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion on the McPan and Starbuck soils.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil.
• The very low and low available water capacity of the McPan and Starbuck soils limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Paulville soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

142—Paulville-Purdam complex, 2 to 8 percent slopes

Composition

Paulville loam and similar inclusions—45 percent
Purdam loam and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,000 to 3,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Paulville Soil

Position on landscape: Toeslopes of lacustrine terraces
Slope: 2 to 4 percent
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 47 inches—light gray and pale brown loam and silt loam
47 to 64 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium

Characteristics of the Purdam Soil

Position on landscape: Concave areas of dissected fan terraces
Typical profile:
0 to 8 inches—pale brown loam
8 to 19 inches—pale brown silty clay loam
19 to 24 inches—very pale brown silt loam
24 to 61 inches—lime- and silica-cemented pan with lenses of silt loam, sandy loam, and silty clay loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 21 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 24 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Kudlac silt loam in convex positions (10 percent)
• Xeric Torriorthents that have slopes of more than 8 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:

• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Purdam soil.
• Suitable management practices are needed to overcome the hazard of water erosion on the Purdam soil.
• Irrigation water management is needed to overcome the low available water capacity of the Purdam soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Purdam soil.
• Suitable management practices are needed to overcome the hazard of water erosion on the Purdam soil.
• Irrigation water management is needed to overcome the low available water capacity of the Purdam soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: VIe, irrigated

143—Perla-Darrah-Ruckles complex, 1 to 4 percent slopes

Composition

Perla silt loam and similar inclusions—40 percent
Darrah silt loam and similar inclusions—30 percent
Ruckles very stony silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Perla Soil

Position on landscape: Smooth, gently sloping areas of basalt plains
Typical profile:
0 to 10 inches—grayish brown and brown silt loam
10 to 24 inches—dark brown and pale brown silty clay loam
24 to 29 inches—brown silty clay
29 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Darrah Soil

Position on landscape: Drainageways and basins on basalt plains
Typical profile:
0 to 11 inches—pale brown and brown silt loam
11 to 27 inches—brown and pale brown silty clay loam
27 to 34 inches—yellowish brown silty clay loam
34 to 60 inches—light yellowish brown silty clay
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Medium to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Ruckles Soil

Position on landscape: Eroded drainageways and convex areas of basalt plains
Typical profile:
0 to 8 inches—brown very stony silt loam
8 to 13 inches—yellowish brown very stony silty clay
13 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Nammoth extremely stony silt loam in convex positions (10 percent)
• Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, stones in the surface layer, slow permeability, shallow depth to bedrock, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Perla soil—xericensis big sagebrush and bluebunch wheatgrass; Darrah soil—threetip sagebrush and bluebunch wheatgrass; Ruckles soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• The slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Seeding and mechanical treatment are limited by the stones in the surface layer of the Ruckles soil.
• The low available water capacity of the Ruckles soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Ruckles soil.

Interpretive Groups

Capability classification: VIc, nonirrigated
Range site: Perla soil—010AY033ID Loamy 11-13 ARTRX/PSSP6; Darrah soil—010AY035ID Loamy Basin 11-13 ARTR4/PSSP6; Ruckles soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

144—Pits, borrow

Composition

Pits, borrow—100 percent

Characteristics of the Pits, Borrow

Location in survey area: Throughout the survey area, commonly adjacent to roads and highways
Position on landscape: Commonly in areas near deep or very deep soils
Size of areas: Generally 2 to 10 acres
Shape of areas: Typically square

Pits, borrow, consists of areas where soil material has been removed for use in the construction of roads and in various other construction sites where fill material is needed. Barren bedrock may be exposed in the excavations. Some areas may become wet after excavation.

Interpretive Groups

Capability classification: VIII

145—Pits, gravel

Composition

Pits, gravel—90 percent
Contrasting inclusions—10 percent

Characteristics of the Pits, Gravel

Location in survey area: Throughout in areas of rivers and streams
Position on landscape: Alluvial terraces
Shape of areas: Generally square

Pits, gravel, consists of areas of gravelly alluvium where sand, gravel, and cobbles have been removed. These areas are subject to ponding if the water table is within the depth to which they have been excavated.

Contrasting Inclusions

• Wet soils near streams and rivers

Interpretive Groups

Capability classification: VIII

146—Playas

Composition

Playas—90 percent
Contrasting inclusions—10 percent

Characteristics of the Playas

Location in survey area: Throughout
Position on landscape: Closed basins
Kind of material: Silty alluvium
Vegetation: None or very little

Playas consist of barren flats or depressional areas, most of which are filled with water during periods of runoff in spring and are a source of water for wildlife and livestock until late in spring or early in summer. Playas are subject to erosion when dry.

Contrasting Inclusions

• Small areas of deep soils that are wet for short periods in spring and are in the lowest positions in the areas of Playas

Major Use

Habitat for waterfowl, shore birds, and various mammals in spring

Interpretive Groups

Capability classification: VIII

147—Power silt loam, 0 to 3 percent slopes

Composition

Power silt loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,350 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Power Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 10 inches—brown silt loam
10 to 23 inches—yellowish brown silt loam
23 to 29 inches—pale brown silt loam
29 to 40 inches—very pale brown silt loam
40 to 64 inches—very pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Contrasting Inclusions

- Gooding silt loam and Elijah silt loam in convex positions and on side slopes (10 percent)
- Purdam silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIe, irrigated

148—Power-McPan complex, 1 to 3 percent slopes

Composition

Power silt loam and similar inclusions—65 percent
McPan silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Power Soil

Position on landscape: Side slopes and basins between ridges on basalt plains and buttes
Typical profile:
0 to 6 inches—brown silt loam
6 to 38 inches—yellowish brown silt loam
38 to 64 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of water erosion: Slight or moderate

Characteristics of the McPan Soil

Position on landscape: Side slopes of ridges on basalt plains and buttes
Typical profile:

0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Besslen loam in convex positions (10 percent)
• Taunton loam on eroded ridges (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of water erosion and depth to bedrock and to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the McPan soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the McPan soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

149—Power-Purdam complex, 1 to 4 percent slopes

Composition

Power very fine sandy loam and similar inclusions—55 percent
Purdam very fine sandy loam and similar inclusions—35 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Power Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 11 inches—brown very fine sandy loam
11 to 25 inches—yellowish brown and brown silt loam
25 to 66 inches—very pale brown and pale brown very fine sandy loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Purdam Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 26 inches—yellowish brown silty clay loam
26 to 33 inches—very pale brown silt loam
33 to 49 inches—very pale brown, lime- and

silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 21 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 33 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Bruncan stony loam and Wendell very fine sandy loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Purdam soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Purdam soil.
• Commonly used irrigation methods include corrugation, furrow, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Purdam soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Purdam soil.
• Commonly used irrigation methods include corrugation, furrow, and sprinkler systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

150—Power-Starbuck-Rock outcrop complex, 0 to 6 percent slopes

Composition

Power silt loam and similar inclusions—50 percent
Starbuck silt loam and similar inclusions—20 percent
Rock outcrop—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,800 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Power Soil

Position on landscape: Level basins between ridges on basalt plains
Slope: 0 to 3 percent
Typical profile:
0 to 6 inches—brown silt loam
6 to 38 inches—yellowish brown silt loam
38 to 64 inches—very pale brown silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow
Hazard of water erosion: Slight or moderate

Characteristics of the Starbuck Soil

Position on landscape: Midslopes of ridges on basalt plains
Slope: 3 to 6 percent
Typical profile:
0 to 6 inches—brown silt loam
6 to 16 inches—yellowish brown silt loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches

Runoff: Slow or medium
Hazard of water erosion: Moderate or severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Basalt pressure ridges that rise steeply from adjacent, nearly level basins

Contrasting Inclusions

• Farmell silt loam that has slopes of 0 to 1 percent and is in depressions (10 percent)
• McPan silt loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Rock outcrop, hazard of water erosion, very low available water capacity, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation system mainlines and ditches is limited by the areas of Rock outcrop and the depth to bedrock in the Starbuck soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Irrigation water management is needed to overcome the very low available water capacity of the Starbuck soil.
• Corrugation, furrow, and sprinkler irrigation systems commonly are used on the Power soil, but only sprinkler systems are used on the Starbuck soil.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation system mainlines and ditches is limited by the areas of Rock outcrop and the depth to bedrock in the Starbuck soil.
• Suitable management practices are needed to overcome the hazard of water erosion.
• Irrigation water management is needed to overcome the very low available water capacity of the Starbuck soil.
• Corrugation, furrow, and sprinkler irrigation systems commonly are used on the Power soil, but only sprinkler systems are used on the Starbuck soil.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Rangeland seeding and brush management are limited by the hazard of water erosion, very low available water capacity, and areas of Rock outcrop.
• Forage species that can tolerate droughtiness should be seeded.
• Proper distribution of livestock and fencing are limited by the areas of Rock outcrop and the depth to bedrock in the Starbuck soil.
• Construction of stock water pipelines is limited by the areas of Rock outcrop and the depth to bedrock in the Starbuck soil.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Power soil—011AYOO9ID Loamy 8-12 ARTRT/PSSP6; Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

151—Quencheroo-Loupence complex, 0 to 1 percent slopes

Composition

Quencheroo silt loam and similar inclusions—65 percent
Loupence silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,500 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Quencheroo Soil

Position on landscape: Smooth, slightly elevated areas on stream terraces
Typical profile:
0 to 5 inches—grayish brown silt loam
5 to 21 inches—brown loam

21 to 49 inches—brown silt loam
49 inches—lime- and silica-coated basalt

Depth class: Deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very slow

Characteristics of the Loupence Soil

Position on landscape: Smooth, slightly concave areas on stream terraces
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 19 inches—grayish brown silty clay loam
19 to 28 inches—grayish brown silt loam
28 to 42 inches—brown very fine sandy loam
42 to 67 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Frequency of flooding: Rare
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow

Contrasting Inclusions

• Soils that are similar to the Quencheroo soil but have bedrock at a depth of less then 40 inches (10 percent)
• Soils that are immediately adjacent to streams and rivers and are similar to the Quencheroo and Loupence soils but are wet (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Few limitations

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Proper irrigation water management is needed.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Proper irrigation water management is needed.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIc, irrigated

152—Quiero-Ruckles-Nammoth complex, 1 to 12 percent slopes

Composition

Quiero loam and similar inclusions—30 percent
Ruckles very gravelly loam and similar inclusions—30 percent
Nammoth extremely bouldery loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,200 to 5,000 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Quiero Soil

Position on landscape: Structural benches and side slopes of foothills
Typical profile:
0 to 10 inches—grayish brown and brown loam
10 to 21 inches—yellowish brown loam and clay loam
21 to 36 inches—brown clay loam
36 inches—welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Ruckles Soil

Position on landscape: Eroded structural benches on foothills
Slope: 1 to 8 percent
Typical profile:
0 to 7 inches—brown very gravelly loam

7 to 16 inches—yellowish brown extremely cobbly clay
16 inches—welded tuff

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Nammoth Soil

Position on landscape: Side slopes and convex areas of foothills
Typical profile:
0 to 8 inches—grayish brown and brown extremely bouldery loam
8 to 13 inches—brown very bouldery clay loam
13 to 23 inches—yellowish brown extremely bouldery clay
23 inches—welded tuff

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Darrah silt loam and Perla silt loam on benches (10 percent)
• Rock outcrop on eroded structural benches and side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, very low and low available water capacity, depth to bedrock, and boulders in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Quiero and Nammoth soils—xericensis big sagebrush and bluebunch wheatgrass; Ruckles soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the boulders in the surface layer of the Nammoth soil.
• The low and very low available water capacity limit the selection of species suitable for seeding.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Ruckles soil.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Quiero soil—010AY033ID Loamy 11-13 ARTRX/PSSP6; Ruckles soil—010AY007ID Shallow Stony Loamy 8-16 ARAR8/PSSP6; Nammoth soil—010AY032ID Bouldery 11-13 ARTRX/PSSP6

153—Quincy fine sand, 1 to 4 percent slopes

Composition

Quincy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,900 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Quincy Soil

Position on landscape: Smooth to undulating areas on basalt plains
Typical profile:
0 to 2 inches—brown fine sand
2 to 43 inches—yellowish brown fine sand and loamy fine sand
43 to 61 inches—pale brown loamy fine sand

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Very severe

Contrasting Inclusions

• Walco fine sand in convex positions (10 percent)
• Ackelton fine sandy loam in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Proper irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pastureland

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

154—Quincy loamy sand, 1 to 4 percent slopes

Composition

Quincy loamy sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Quincy Soil

Position on landscape: Slightly rolling to smooth areas on basalt plains
Typical profile:
0 to 6 inches—brown loamy sand
6 to 51 inches—yellowish brown loamy fine sand
51 to 69 inches—pale brown fine sand
Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Severe

Contrasting inclusions

• Walco fine sand in convex positions (10 percent)
• Soils that are similar to the Quincy loamy sand but are wet at a depth of 20 to 40 inches, are in drainageways, and support irrigated crops (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• The coarse textured surface layer is susceptible to wind erosion.
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• The coarse textured surface layer is susceptible to wind erosion.
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

155—Quincy-Kecko complex, 1 to 4 percent slopes

Composition

Quincy fine sand and similar inclusions—45 percent
Kecko loamy fine sand and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,400 to 4,500 feet
Average annual precipitation: About 10 inches

Average annual air temperature: About 49 degrees F
Frost-free period: 110 days

Characteristics of the Quincy Soil

Position on landscape: Smooth and slightly convex areas on basalt plains
Typical profile:
0 to 10 inches—brown fine sand
10 to 46 inches—pale brown loamy fine sand
46 to 60 inches—very pale brown loamy fine sand
Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Very severe

Characteristics of the Kecko Soil

Position on landscape: Basalt plains
Typical profile:
0 to 14 inches—brown and yellowish brown loamy fine sand
14 to 27 inches—yellowish brown fine sandy loam
27 to 46 inches—pale brown and very pale brown fine sandy loam
46 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 42 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Ackelton loamy fine sand (10 percent)
- Taunton loamy fine sand in depressions and convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVs, irrigated

156—Quincy-Walco complex, 2 to 12 percent slopes

Composition

Quincy fine sand and similar inclusions—50 percent
Walco fine sand and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 4,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Quincy Soil

Position on landscape: Concave areas on basalt plains
Slope: 2 to 4 percent
Typical profile:
0 to 2 inches—brown fine sand
2 to 43 inches—yellowish brown fine sand and loamy fine sand
43 to 61 inches—pale brown loamy fine sand
Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of wind erosion: Very severe

Characteristics of the Walco Soil

Position on landscape: Convex areas on basalt plains
Slope: 4 to 12 percent

Typical profile:
0 to 13 inches—brown and yellowish brown fine sand
13 to 21 inches—yellowish brown loamy fine sand
21 inches—basalt
Depth class: Moderately deep
Drainage class: Excessively drained
Permeability: Rapid
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Very slow
Hazard of wind erosion: Very severe

Contrasting Inclusions

- Rekima very stony fine sandy loam (5 percent)
- Wako loamy fine sand in convex positions (5 percent)
- Jestrick fine sand in convex positions (5 percent)

Use and Management

Major uses: Cropland, rangeland (fig. 13), pasture, and hayland
Major management factors: Hazard of wind erosion, very low and low available water capacity, and depth to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the very low and low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Walco soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Figure 13.—Rangeland in an area of Quincy-Walco complex, 2 to 12 percent slopes.

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Rangeland seeding and brush management are limited by the hazard of wind erosion and the low and very low available water capacity.
• The low and very low available water capacity limit the selection of species suitable for seeding.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock in the Walco soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated, and VIIe, nonirrigated
Range site: Quincy and Walco soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

157—Rehfield loamy sand, 1 to 6 percent slopes

Composition

Rehfield loamy sand and similar inclusions—75 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,400 to 4,800 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Rehfield Soil

Position on landscape: Drainageways and concave areas of basalt plains
Typical profile:
0 to 12 inches—brown and dark grayish brown loamy sand
12 to 40 inches—yellowish brown loam and sandy clay loam
40 to 61 inches—light yellowish brown loamy sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow or very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Pagari very cobbly sandy loam on ridges (10 percent)
• Cox very stony sandy loam near areas of Rock outcrop (10 percent)
• Rock outcrop on ridges and steep side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factor: Hazard of wind erosion

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of wind erosion.

Interpretive Groups

Capability classification: IIIe, nonirrigated
Range site: 011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

158—Riverwash

Composition

Riverwash—90 percent
Contrasting inclusions—10 percent

Characteristics of the Riverwash

Location in survey area: Throughout
Position on landscape: Along Big Wood and Little Wood Rivers
Description of areas: Unstable gravel bars that consist mainly of sand, gravel, cobbles, stones, and boulders and are subject to flooding
Vegetation: None or very little

Contrasting Inclusions

• Small areas that consist of soil material that remains in place, that exhibit varying degrees of wetness, and where the frequency of flooding varies

Major Use

Wildlife habitat

Interpretive Groups

Capability classification: VIII

159—Rubbleland

Composition

Rubbleland—90 percent
Contrasting inclusions—10 percent

Characteristics of the Rubbleland

Location in survey area: Throughout
Position on landscape: Base of steep escarpments of basalt, welded tuff, or rhyolite and steep canyonsides along major drainageways
Description of areas: Areas that are covered with cobbles, stones, and boulders that have broken off the parent rock and moved downslope
Vegetation: None or very little

Contrasting Inclusions

• Small areas of soils that are named in adjacent map units

Interpretive Groups

Capability classification: VIII

160—Rubbleland-Typic Calciorthids complex, 20 to 65 percent slopes

Composition

Rubbleland—45 percent
Typic Calciorthids very stony loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—15 percent

Setting

Position on landscape: Concave areas and toeslopes on basalt escarpments
Elevation: 2,700 to 3,400 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Rubbleland

Kind of material: Basalt cobbles, stones, and boulders
Position on landscape: Escarpments, base of steep slopes, and near drainageways
Vegetation: None or very little

Characteristics of the Typic Calciorthids

Position on landscape: Toeslopes of basalt escarpments
Example profile:
0 to 7 inches—brown very stony loamy fine sand
7 to 60 inches—very pale brown loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid or rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of erosion: By water—severe or very severe; by wind—severe

Contrasting Inclusions

• Rock outcrop (5 percent)
• Soils that are similar to the Typic Calciorthids but are wet and are near springs (5 percent)
• Bahem fine sandy loam in concave areas (5 percent)

Use and Management

Major use: Wildlife habitat
Major management factors: Hazards of wind and water erosion, rock fragments in the surface layer, slope, and available water capacity

Wildlife Habitat

Dominant vegetation in the potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Seeding of disturbed areas is limited by the steep slopes and the hazard of erosion.
• Adapted forage species that can tolerate droughtiness should be seeded.
• Seeding is limited by the rock fragments in the surface layer.

Interpretive Groups

Capability classification: VIIIe, nonirrigated
Range site: Typic Calciorthids—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

161—Schnipper-Bruncan complex, 2 to 8 percent slopes

Composition

Schnipper fine sandy loam and similar inclusions—55 percent
Bruncan stony loam and similar inclusions—25 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,500 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Schnipper Soil

Position on landscape: Slightly convex areas on basalt plains
Typical profile:
0 to 8 inches—dark brown fine sandy loam
8 to 12 inches—dark yellowish brown fine sandy loam
12 to 16 inches—yellowish brown clay loam
16 to 29 inches—very pale brown fine sandy loam and pale brown loam
29 to 58 inches—white, lime- and silica-cemented hardpan
58 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Bruncan Soil

Position on landscape: Ridges on basalt plains
Typical profile:
0 to 6 inches—brown stony loam
6 to 11 inches—pale brown clay loam
11 to 13 inches—very pale brown very cobbly fine sandy loam
13 to 18 inches—very pale brown, lime- and silica-cemented hardpan
18 inches—basalt with hardpan material in fractures
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 11 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 13 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Contrasting Inclusions

• Harsan loamy fine sand in concave positions (10 percent)
• Marley very fine sandy loam in drainageways (5 percent)
• Kecko fine sandy loam on dunes (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of erosion, available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Bruncan soil and by the depth to the hardpan in the Schnipper soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa hay and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low and low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to bedrock and to the hardpan in the Bruncan soil and by the depth to the hardpan in the Schnipper soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

162—Schooler-Duguesclin-Willho complex, 2 to 6 percent slopes

Composition

Schooler extremely stony silty clay loam and similar inclusions—40 percent
Duguesclin very cobbly clay loam and similar inclusions—25 percent
Willho silt loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,100 to 5,800 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Schooler Soil

Position on landscape: Convex areas on basalt plateaus and mesas
Typical profile:
0 to 2 inches—brown extremely stony silty clay loam
2 to 5 inches—brown very cobbly silty clay loam
5 to 14 inches—brown very cobbly silty clay
14 to 22 inches—yellowish brown very cobbly silty clay
22 to 26 inches—light reddish brown very cobbly clay loam
26 to 28 inches—very pale brown, silica-cemented hardpan
28 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 20 to 38 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 26 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Duguesclin Soil

Position on landscape: Drainageways and concave areas of basalt plateaus and mesas
Typical profile:
0 to 2 inches—yellowish brown very cobbly clay loam
2 to 11 inches—yellowish brown clay
11 to 22 inches—brown clay
22 to 33 inches—light brown clay loam
33 to 41 inches—pink, silica-cemented hardpan
41 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 33 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Willho Soil

Position on landscape: Basins and uneroded areas of basalt plateaus and mesas
Typical profile:
0 to 7 inches—brown silt loam
7 to 12 inches—brown silty clay loam
12 to 23 inches—yellowish brown silty clay loam
23 to 31 inches—brown clay
31 to 60 inches—light reddish brown, silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 31 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Rubbleland (10 percent)
- Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland (fig. 14)
Major management factors: Hazard of water erosion, very slow and slow permeability of the subsoil, shrink-swell potential, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Low sagebrush and bluebunch wheatgrass

Figure 14.—Rangeland in an area of Schooler-Duguesclin-Willho complex, 2 to 6 percent slopes.

Major management considerations:
- Mechanical seeding and distribution of livestock are limited by the stones in the surface layer of the Schooler soil.
- The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The high shrink-swell potential of the Duguesclin soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVs, nonirrigated
Range site: Schooler, Duguesclin, and Willho soils—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

163—Sidlake-Banbury complex, 2 to 4 percent slopes

Composition

Sidlake loam and similar inclusions—45 percent
Banbury loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 115 days

Characteristics of the Sidlake Soil

Position on landscape: Side slopes and concave areas of basalt plains
Typical profile:
0 to 8 inches—yellowish brown loam
8 to 24 inches—yellowish brown clay loam, sandy clay loam, and loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Banbury Soil

Position on landscape: Convex tops of basalt plains
Typical profile:
0 to 3 inches—brown loam
3 to 8 inches—yellowish brown loam
8 to 16 inches—light yellowish brown loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium

Contrasting Inclusions

- Hoosegow loam in depressions (10 percent)
- Soils that are similar to the Banbury soil but have a very stony loam surface layer and are on ridges (10 percent)

Use and Management

Major uses: Hayland, pasture, and rangeland
Major management factors: Hazard of water erosion, low and very low available water capacity, and depth to bedrock

Hayland and Pasture

Commonly grown crops: Irrigated hayland and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to bedrock.
- Irrigation water management is needed to overcome the low and very low available water capacity.
- Suitable management practices are needed to overcome the hazard of water erosion on the Sidlake soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Sidlake soil—Wyoming sagebrush and needleandthread; Banbury soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
- The low and very low available water capacity limit the selection of species suitable for seeding.
- Construction of fences and excavation for stock water pipelines are limited by the shallow depth to bedrock in the Banbury soil.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Sidlake soil—011AY001ID Loamy 8-10 ARTRW8/ACTH7; Banbury soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

164—Sidlake-Banbury complex, 4 to 25 percent slopes

Composition

Sidlake loam and similar inclusions—45 percent
Banbury loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Setting

Elevation: 3,200 to 3,450 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Sidlake Soil

Position on landscape: Smooth and slightly concave areas on rounded hills capped with pillow basalt
Typical profile:
0 to 2 inches—dark brown loam
2 to 31 inches—brown clay loam
31 to 39 inches—brown loam
39 inches—highly weathered basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Characteristics of the Banbury Soil

Position on landscape: Convex areas on rounded hills capped with pillow basalt
Typical profile:
0 to 2 inches—brown loam
2 to 11 inches—dark yellowish brown clay loam
11 to 15 inches—weathered, mineralized basalt
15 inches—unweathered basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Contrasting Inclusions

• Hoosegow loam in drainageways (5 percent)
• Rock outcrop consisting of pillow basalt (5 percent)
• Xeric Torriorthents stony loam on all positions (5 percent)
• Soils that are similar to the Sidlake and Banbury soils but have a very gravelly loam surface layer and are downslope from the areas of Rock outcrop (5 percent)
• Soils that are similar to the Sidlake soil but are moderately deep to a paralithic contact with calcareous lake sediment and are on geologic inclusions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, depth to bedrock, and very low and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low and low available water capacity limit the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Banbury soil.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Sidlake soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Banbury soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

165—Sidlake-Rock outcrop-Hoosegow complex, 2 to 12 percent slopes

Composition

Sidlake fine sandy loam and similar inclusions—35 percent
Rock outcrop—30 percent
Hoosegow loam and similar inclusions—25 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,300 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Sidlake Soil

Position on landscape: Side slopes of basalt plains
Typical profile:
0 to 2 inches—grayish brown fine sandy loam
2 to 7 inches—brown fine sandy loam
7 to 24 inches—yellowish brown loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Rock Outcrop

Position on landscape: Steep side slopes and ridges
Kind of material: Basalt

Characteristics of the Hoosegow Soil

Position on landscape: Drainageways and toeslopes of basalt plains
Slope: 2 to 4 percent
Typical profile:
0 to 7 inches—brown and yellowish brown loam
7 to 25 inches—yellowish brown loam

25 to 41 inches—yellowish brown sandy clay loam
41 to 50 inches—light yellowish brown fine sandy loam
50 to 77 inches—pale brown fine sandy loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

• Banbury loam on tops near basalt pressure ridges (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, Rock outcrop, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Sidlake soil—basin big sagebrush and bluebunch wheatgrass; Hoosegow soil—basin big sagebrush and basin wildrye
Major management considerations:
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion on the Sidlake soil.
• The low available water capacity of the Sidlake soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Sidlake soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Hoosegow soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

166—Sidlake-Rock outcrop-Starbuck complex, 2 to 12 percent slopes

Composition

Sidlake loamy fine sand and similar inclusions—35 percent
Rock outcrop—25 percent
Starbuck fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,400 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Sidlake Soil

Position on landscape: Side slopes and concave areas of basalt plains
Typical profile:
0 to 3 inches—grayish brown loamy fine sand
3 to 8 inches—yellowish brown loam
8 to 18 inches—yellowish brown sandy clay loam
18 to 24 inches—yellowish brown loam
24 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—severe

Characteristics of the Rock Outcrop

Position on landscape: Convex pressure ridges and side slopes
Kind of material: Basalt

Characteristics of the Starbuck Soil

Position on landscape: Convex tops of basalt plains
Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 16 inches—yellowish brown loam
16 inches—basalt

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Contrasting Inclusions

• Kecko loamy fine sand in depressions (10 percent)
• Paulville loamy fine sand in depressions and drainageways (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind

and water erosion, depth to bedrock, very low and low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Sidlake soil—basin big sagebrush, Indian ricegrass, and needleandthread; Starbuck soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The very low and low available water capacity limit the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Sidlake soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8; Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

167—Sidlake-Starbuck complex, 1 to 8 percent slopes

Composition

Sidlake fine sandy loam and similar inclusions—50 percent
Starbuck fine sandy loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Sidlake Soil

Position on landscape: Side slopes and concave areas of basalt plains
Typical profile:
0 to 2 inches—grayish brown fine sandy loam
2 to 7 inches—brown fine sandy loam
7 to 24 inches—yellowish brown loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium
Hazard of erosion: By water—moderate; by wind—moderate

Characteristics of the Starbuck Soil

Position on landscape: Ridges and side slopes of basalt plains
Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 16 inches—yellowish brown loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of erosion: By water—moderate; by wind—moderate

Contrasting Inclusions

- Paulville loam in drainageways (10 percent)
- Taunton loam on mounds (5 percent)
- Rock outcrop on pressure ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, depth to bedrock, and very low and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil.
• The very low and low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Sidlake soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

168—Simonton loam, 0 to 3 percent slopes

Composition

Simonton loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,300 to 5,800 feet
Average annual precipitation: About 16 inches
Average annual air temperature: About 42 degrees F
Frost-free period: About 65 days

Characteristics of the Simonton Soil

Position on landscape: Closed basins on foothills
Typical profile:
0 to 14 inches—brown loam
14 to 38 inches—light brown and yellowish brown clay loam
38 to 62 inches—brown sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Contrasting Inclusions

- Elkcreek loam in convex areas (5 percent)
- Mulshoe extremely bouldery loam in convex areas (5 percent)
- Simonton loam that has slopes of 4 to 12 percent and is on toeslopes (3 percent)
- Rock outcrop in convex areas (2 percent)

Use and Management

Major use: Rangeland
Major management factors: Few limitations

Rangeland

Dominant vegetation in potential natural plant community: Mountain big sagebrush and Idaho fescue

Interpretive Groups

Capability classification: IIIc, nonirrigated
Range site: 010AY004ID Loamy 12-16 ARTRV/FEID

169—Simonton-Fergie-Willho complex, 2 to 8 percent slopes

Composition

Simonton loam and similar inclusions—40 percent
Fergie gravelly loam and similar inclusions—20 percent
Willho silt loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 5,400 to 5,800 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Simonton Soil

Position on landscape: Areas where runoff accumulates and drainageways on foothills
Slope: 2 to 4 percent
Typical profile:
0 to 14 inches—brown loam
14 to 38 inches—light brown and yellowish brown clay loam
38 to 62 inches—brown sandy clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow or slow

Characteristics of the Fergie Soil

Position on landscape: Concave areas of foothills
Typical profile:
0 to 10 inches—brown gravelly loam
10 to 22 inches—yellowish brown very gravelly loam
22 to 52 inches—light yellowish brown extremely gravelly sandy clay loam
52 inches—highly fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Willho Soil

Position on landscape: Areas where runoff accumulates and eroded drainageways on basalt plains
Typical profile:
0 to 7 inches—brown silt loam
7 to 12 inches—brown silty clay loam
12 to 23 inches—yellowish brown silty clay loam
23 to 31 inches—brown clay

31 to 60 inches—light reddish brown, silica-cemented hardpan

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 31 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Duguesclin very cobbly clay loam on hills (10 percent)
• Schooler extremely stony silty clay loam on ridges (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Very slow permeability and hazard of water erosion

Rangeland

Dominant vegetation in potential natural plant community: Simonton soil—mountain big sagebrush and Idaho fescue; Fergie soil—mountain big sagebrush and bluebunch wheatgrass; Willho soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• The very slow permeability in the subsoil of the Willho soil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: IVs, nonirrigated
Range site: Simonton soil—010AY004ID Loamy 12-16 ARTRV/FEID; Fergie soil—010AY019ID Loamy 12-16 ARTRV/PSSP6; Willho soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

170—Skelter-Stash complex, 20 to 50 percent slopes

Composition

Skelter gravelly loam and similar inclusions—65 percent
Stash extremely stony clay loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,000 to 5,800 feet
Aspect: South and west
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Skelter Soil

Position on landscape: Smooth and convex areas on canyonsides
Typical profile:
0 to 10 inches—dark grayish brown gravelly loam
10 to 27 inches—grayish brown and brown gravelly sandy clay loam
27 to 38 inches—brown sandy clay loam
38 to 60 inches—light yellowish brown, stratified sandy loam to extremely gravelly fine sandy loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified sandy loam to extremely gravelly fine sandy loam
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Stash Soil

Position on landscape: Slump blocks and structural benches on toeslopes of canyonsides
Slope: 20 to 30 percent
Typical profile:
0 to 11 inches—dark grayish brown extremely stony clay loam
11 to 41 inches—yellowish brown very cobbly clay
41 to 48 inches—light yellowish brown very cobbly loam
48 to 62 inches—light yellowish brown very cobbly loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Rapid or very rapid
Hazard of water erosion: Severe or very severe

Contrasting Inclusions

• Rubbleland on upper slopes and midslopes (5 percent)

- Rock outcrop near canyon rims (5 percent)
- Molyneux loam on toeslopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, steep slopes, and stones in the surface layer

Rangeland

Dominant vegetation in potential natural plant community: Skelter soil—mountain big sagebrush and bluebunch wheatgrass; Stash soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
- Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes of the Skelter soil and the stones in the surface layer of the Stash soil.
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Skelter soil—010AY009ID South Slope Gravelly 12-16 ARTRV/PSSP6; Stash soil—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

171—Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes

Composition

Snowmore loam and similar inclusions—40 percent
Besslen loam and similar inclusions—30 percent
Hoosegow loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,000 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Snowmore Soil

Position on landscape: Convex side slopes of buttes
Typical profile:
0 to 9 inches—brown loam
9 to 15 inches—yellowish brown loam
15 to 21 inches—pale brown loam
21 to 26 inches—very pale brown sandy clay loam
26 to 39 inches—very pale brown, lime- and silica-cemented hardpan
39 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Very slow or slow

Characteristics of the Besslen Soil

Position on landscape: Convex tops of buttes
Typical profile:
0 to 2 inches—pale brown loam
2 to 13 inches—light yellowish brown loam
13 to 19 inches—very pale brown gravelly sandy loam
19 to 38 inches—white, lime- and silica-cemented hardpan
38 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 19 inches
Runoff: Slow

Characteristics of the Hoosegow Soil

Position on landscape: Drainageways and basins on buttes
Typical profile:
0 to 7 inches—brown loam and yellowish brown loam
7 to 25 inches—yellowish brown loam
25 to 41 inches—yellowish brown loam and sandy clay loam
41 to 50 inches—light yellowish brown fine sandy loam
50 to 60 inches—pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow

Contrasting Inclusions

- Sidlake loam on convex side slopes (7 percent)
- Besslen gravelly loam (5 percent)
- Bruncan stony loam (3 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland

Major management factors: Low and very low available water capacity and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, corn for silage, sugar beets, dry beans, and potatoes
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore and Besslen soils.
• Irrigation water management is needed to overcome the very low available water capacity of the Besslen soil and the low available water capacity of the Snowmore soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore and Besslen soils.
• Irrigation water management is needed to overcome the very low available water capacity of the Besslen soil and the low available water capacity of the Snowmore soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Snowmore soil—Wyoming big sagebrush and bluebunch wheatgrass; Besslen soil—Wyoming big sagebrush and Thurber needlegrass; Hoosegow soil—basin big sagebrush and basin wildrye
Major management considerations:
• Excavation for stock water pipelines, installation of fences, and distribution of livestock are limited by the shallow depth to the cemented pan in the Besslen soil.

Interpretive Groups

Capability classification: IVe, irrigated, and VIe, nonirrigated
Range site: Snowmore soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Besslen soil—011XY003ID Loamy 7-10 ARTRW8/ACTH7; Hoosegow soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

172—Snowmore-Idow-Bruncan complex, 2 to 8 percent slopes

Composition

Snowmore fine sandy loam and similar inclusions—50 percent
Idow fine sandy loam and similar inclusions—20 percent
Bruncan loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Snowmore Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 7 inches—pale brown fine sandy loam
7 to 27 inches—yellowish brown loam
27 to 31 inches—pale brown gravelly loam
31 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Idow Soil

Position on landscape: Concave areas of basalt plains
Typical profile:
0 to 6 inches—brown fine sandy loam
6 to 17 inches—yellowish brown fine sandy loam
17 to 21 inches—yellowish brown sandy clay loam
21 to 35 inches—very pale brown loam
35 to 51 inches—white, lime- and silica-cemented hardpan
51 inches—basalt
Depth class: Moderately deep to a hardpan

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 35 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Bruncan Soil

Position on landscape: Broad ridgetops on basalt plains
Typical profile:
0 to 4 inches—brown loam
4 to 10 inches—brown loam
10 to 17 inches—yellowish brown clay loam
17 to 19 inches—dark yellowish brown very cobbly silt loam
19 to 25 inches—pale brown, lime- and silica-cemented hardpan
25 inches—basalt with hardpan material in fractures
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 11 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 19 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to Harsan fine sandy loam but have a dark-colored surface layer and are in drainageways (10 percent)
• Snowmore, Idow, and Bruncan soils that have slopes of 8 to 12 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazards of wind and water erosion, low and very low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the very low available water capacity of the Bruncan soil and the low available water capacity of the Idow and Snowmore soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore and Bruncan soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the very low available water capacity of the Bruncan soil and the low available water capacity of the Idow and Snowmore soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore and Bruncan soils and the depth to the hardpan in the Idow soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

173—Snowmore-Idow-Harsan complex, 0 to 4 percent slopes

Composition

Snowmore loam and similar inclusions—40 percent
Idow loam and similar inclusions—30 percent
Harsan loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,500 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Snowmore Soil

Position on landscape: Convex areas and smooth slopes of basalt plains

Typical profile:
0 to 9 inches—brown loam
9 to 15 inches—yellowish brown loam
15 to 21 inches—pale brown loam
21 to 26 inches—very pale brown sandy clay loam
26 to 39 inches—very pale brown, lime- and silica-cemented hardpan
39 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Very slow or slow

Characteristics of the Idow Soil

Position on landscape: Concave areas of basalt plains
Typical profile:
0 to 7 inches—brown loam
7 to 16 inches—yellowish brown loam
16 to 26 inches—yellowish brown sandy clay loam
26 to 34 inches—very pale brown loam
34 to 54 inches—white, lime- and silica-cemented hardpan
54 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 34 inches
Runoff: Slow

Characteristics of the Harsan Soil

Position on landscape: Concave areas of basalt plains
Typical profile:
0 to 12 inches—brown loam
12 to 31 inches—yellowish brown clay loam
31 to 42 inches—yellowish brown loam
42 to 60 inches—lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 42 inches
Runoff: Very slow or slow

Contrasting Inclusions

- Starbuck silt loam in convex positions (7 percent)
- Rock outcrop on ridges (3 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Low available water capacity and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, corn for silage, sugar beets, dry beans, and potatoes
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil and by the depth to the hardpan in the Idow soil.
- Irrigation water management is needed to overcome the low available water capacity of the Snowmore and Idow soils.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil and by the depth to the hardpan in the Idow soil.
- Irrigation water management is needed to overcome the low available water capacity of the Snowmore and Idow soils.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

174—Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes

Composition

Snowmore fine sandy loam and similar inclusions—35 percent
Minveno very fine sandy loam and similar inclusions—25 percent
Hoosegow fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,100 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Snowmore Soil

Position on landscape: Side slopes of basalt plains and buttes
Typical profile:
0 to 6 inches—brown fine sandy loam
6 to 18 inches—brown and yellowish brown sandy clay loam
18 to 22 inches—light yellowish brown and white gravelly loam
22 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Minveno Soil

Position on landscape: Convex tops of basalt plains and buttes
Typical profile:
0 to 2 inches—brown very fine sandy loam
2 to 7 inches—yellowish brown loam
7 to 14 inches—very pale brown loam
14 to 21 inches—white, lime- and silica-cemented hardpan
21 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 14 inches
Runoff: Medium or rapid
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Hoosegow Soil

Position on landscape: Toeslopes, drainageways, and basins on basalt plains and buttes
Slope: 2 to 4 percent
Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 13 inches—brown fine sandy loam
13 to 36 inches—yellowish brown sandy clay loam
36 to 65 inches—light yellowish brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Catchell silt loam and Starbuck loam in convex positions (15 percent)
• Sidlake fine sandy loam in gently sloping positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water and wind erosion and very low and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Snowmore soil—Wyoming big sagebrush and Thurber needlegrass; Minveno soil—Wyoming big sagebrush and bluebunch wheatgrass; Hoosegow soil—basin big sagebrush and basin wildrye
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water and wind erosion.
• The very low and low available water capacity limit the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Snowmore soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Minveno soil—011XY003ID Loamy 7-10 ARTRW8/ACTH7; Hoosegow soil—011AY008ID Loamy Bottom 8-14 ARTRT/LECI4

175—Snowmore-Purdam-Power complex, 1 to 4 percent slopes

Composition

Snowmore very fine sandy loam and similar inclusions—35 percent
Purdam very fine sandy loam and similar inclusions—25 percent
Power very fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Snowmore Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 7 inches—pale brown very fine sandy loam
7 to 27 inches—yellowish brown loam
27 to 31 inches—pale brown gravelly loam
31 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Characteristics of the Purdam Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 26 inches—yellowish brown silty clay loam
26 to 33 inches—very pale brown silt loam
33 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 21 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 33 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Power Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 11 inches—brown very fine sandy loam
11 to 25 inches—yellowish brown and brown silt loam
25 to 60 inches—very pale brown and pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Bruncan cobbly very fine sandy loam in convex positions (10 percent)
• Kecko very fine sandy loam in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Snowmore and Purdam soils.

• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

176—Snowmore-Purdam-Power complex, 4 to 12 percent slopes

Composition

Snowmore very fine sandy loam and similar inclusions—35 percent
Purdam very fine sandy loam and similar inclusions—25 percent
Power very fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Snowmore Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 8 inches—pale brown very fine sandy loam
8 to 19 inches—yellowish brown loam
19 to 30 inches—pale brown and very pale brown loam
30 to 38 inches—white, lime- and silica-cemented hardpan
38 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 30 inches
Runoff: Medium or rapid
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Purdam Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 4 inches—brown very fine sandy loam
4 to 21 inches—yellowish brown silt loam
21 to 34 inches—very pale brown silt loam
34 to 59 inches—very pale brown, lime- and silica-cemented hardpan
59 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 21 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 34 inches
Runoff: Medium or rapid
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Power Soil

Position on landscape: Concave areas on basalt buttes and plains
Slope: 4 to 8 percent
Typical profile:
0 to 11 inches—brown very fine sandy loam
11 to 25 inches—yellowish brown and brown silt loam
25 to 52 inches—very pale brown and pale brown very fine sandy loam
52 to 66 inches—pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Medium
Hazard of erosion: By water—moderate; by wind—moderate

Contrasting Inclusions

• Bruncan stony loam in convex positions (5 percent)
• Kecko very fine sandy loam in depressions (5 percent)
• Taunton very fine sandy loam on convex side slopes (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind and water erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Snowmore and Purdam soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Snowmore and Purdam soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

177—Snowmore-Wako-Harsan complex, 1 to 4 percent slopes

Composition

Snowmore sandy loam and similar inclusions—50 percent
Wako sandy loam and similar inclusions—20 percent
Harsan fine sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,900 to 4,000 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 105 days

Characteristics of the Snowmore Soil

Position on landscape: Convex areas and smooth slopes of basalt plains and buttes
Typical profile:
0 to 6 inches—brown sandy loam
6 to 18 inches—brown and yellowish brown sandy clay loam
18 to 22 inches—light yellowish brown and white gravelly loam
22 to 33 inches—white, lime- and silica-cemented hardpan
33 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 34 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Characteristics of the Wako Soil

Position on landscape: Concave areas and toeslopes of basalt plains and buttes
Typical profile:
0 to 9 inches—grayish brown sandy loam
9 to 22 inches—dark yellowish brown sandy clay loam
22 to 31 inches—yellowish brown clay loam
31 to 34 inches—light yellowish brown loam
34 to 44 inches—white, lime- and silica-cemented hardpan
44 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained

Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 34 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Characteristics of the Harsan Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 18 inches—brown fine sandy loam
18 to 35 inches—yellowish brown sandy clay loam and clay loam
35 to 51 inches—pale brown loam
51 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 51 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Bruncan stony loam in convex positions (10 percent)
• Hoosegow sandy loam in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Depth to a hardpan and to bedrock and the hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil and the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Snowmore soil and the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Snowmore soil—Wyoming big sagebrush and bluebunch wheatgrass; Wako soil—Wyoming big sagebrush and Thurber needlegrass; Harsan soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• The low available water capacity limits the selection of species suitable for seeding.
• Proper distribution of livestock and installation of stock water pipelines are limited by the depth to the hardpan in the Snowmore and Wako soils and the depth to bedrock in the Snowmore soil.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Snowmore soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Wako soil—011AY001ID Loamy 8-10 ARTRW8/ACTH7; Harsan soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

178—Splittop-Atomic complex, 2 to 8 percent slopes

Composition

Splittop loam and similar inclusions—50 percent
Atomic loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,600 to 5,400 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 85 days

Characteristics of the Splittop Soil

Position on landscape: Intermound areas on basalt plains
Typical profile:
0 to 3 inches—brown loam
3 to 15 inches—pale brown loam
15 to 26 inches—very pale brown silt loam
26 to 32 inches—very pale brown very cobbly loam
32 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Atomic Soil

Position on landscape: Mounds on basalt plains
Typical profile:
0 to 15 inches—pale brown loam
15 to 34 inches—very pale brown loam
34 to 46 inches—light yellowish brown cobbly loam
46 inches—basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Soils that are similar to the Splittop soil but are less than 20 inches deep to bedrock and are on ridges (10 percent)
• Soils that are clay loam, are sodium-affected, and are in nonvegetated areas where runoff accumulates (10 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the Splittop soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Splittop and Atomic soils—011BY001ID Loamy 8-12 ARTRW8/PSSP6

179—Springcove-Jansite complex, 0 to 2 percent slopes

Composition

Springcove silt loam and similar inclusions—50 percent
Jansite silt loam and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,000 to 3,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Springcove Soil

Position on landscape: Smooth, slightly concave areas on stream terraces
Typical profile:
0 to 5 inches—light brownish gray silt loam
5 to 32 inches—gray and grayish brown silty clay
32 to 60 inches—light brownish gray silt loam and silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Very slow
Frequency of flooding: Rare

Characteristics of the Jansite Soil

Position on landscape: Slightly convex areas on stream terraces

Typical profile:
0 to 10 inches—grayish brown silt loam
10 to 23 inches—brown silt loam
23 to 41 inches—grayish brown loam
41 to 57 inches—light brownish gray and pale brown silt loam
57 to 60 inches—light brownish gray fine sand
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very slow
Frequency of flooding: Rare

Contrasting Inclusions

- Soils that are similar to the Springcove and Jansite soils but are wet and are near streams and rivers (10 percent)
- Soils that are similar to the Jansite soil but have stratified sand and gravel at a depth of less than 40 inches (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Salinity and sodicity

Cropland

Commonly grown crops: Irrigated wheat and barley
Major management considerations:
- Leaching of soluble salts should be managed to prevent the buildup of salts in the root zone.
- Practices that minimize crusting and encourage seedling emergence may be needed for some crops.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Leaching of soluble salts should be managed to prevent the buildup of salts in the root zone.
- Plants that are adapted to high alkalinity and are salt-tolerant should be seeded.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Black greasewood and saltgrass
Major management considerations:
- Plants that are adapted to high alkalinity and are salt-tolerant should be seeded.
- The surface of the soils is susceptible to crusting.

Interpretive Groups

Capability classification: VIs, irrigated and nonirrigated
Range site: Springcove and Jansite soils—011AY007ID Semiwet Saline Meadow SAVE4/DISP

180—Starbuck-Lava flows complex, 2 to 20 percent slopes

Composition

Starbuck very cobbly silt loam and similar inclusions—50 percent
Lava flows—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Starbuck Soil

Position on landscape: Depressions on basalt plains
Typical profile:
0 to 3 inches—brown very cobbly silt loam
3 to 12 inches—brown and yellowish brown silt loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Lava Flows

Description of areas: Barren flows of basalt associated with recent volcanic activity, typified by the Craters of the Moon National Monument

Common features: Pressure ridges, fissures, and lava tubes

Contrasting Inclusions

- Kecko fine sandy loam in depressions (10 percent)
- Vining fine sandy loam on side slopes (5 percent)
- Soils that are similar to the Starbuck soil but are less than 10 inches deep to basalt and are on ridges (5 percent)

Use and Management

Major use: Rangeland (fig. 15)

Major management factors: Hazard of water erosion, very low available water capacity, depth to bedrock, and Lava flows

Figure 15.—Rangeland in an area of Starbuck-Lava flows complex, 2 to 20 percent slopes.

Rangeland

Dominant vegetation in potential natural plant community: Starbuck soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very low available water capacity limits the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Lava flows.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil and the areas of Lava flows.

Interpretive Groups

Capability classification: VIs, nonirrigated
Range site: Starbuck soil—011AY002ID Shallow Loamy 8-12 ARTRW8/PSSP6

181—Starbuck-McPan-Rock outcrop complex, 2 to 20 percent slopes

Composition

Starbuck silt loam and similar inclusions—40 percent
McPan silt loam and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Starbuck Soil

Position on landscape: Ridgetops on basalt plains
Typical profile:
0 to 3 inches—brown silt loam
3 to 14 inches—light yellowish brown silt loam
14 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to very severe

Characteristics of the McPan Soil

Position on landscape: Convex side slopes of basalt plains
Slope: 2 to 10 percent
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Pressure ridges on basalt plains

Contrasting Inclusions

• Paulville loam in drainageways (5 percent)
• Chijer silt loam on mounds and toeslopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, depth to bedrock, very low and low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Starbuck soil—basin big sagebrush and bluebunch wheatgrass; McPan soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low and low available water capacity limit the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6; McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

182—Starbuck-Rock outcrop-McPan complex, 2 to 6 percent slopes

Composition

Starbuck silt loam and similar inclusions—45 percent
Rock outcrop—25 percent
McPan silt loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 4,000 to 4,450 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Starbuck Soil

Position on landscape: Ridges on basalt plains
Typical profile:
0 to 6 inches—brown silt loam
6 to 16 inches—yellowish brown silt loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of water erosion: Slight to severe

Characteristics of the Rock Outcrop

Kind of material: Basalt
Position on landscape: Pressure ridges on basalt plains

Characteristics of the McPan Soil

Position on landscape: Smooth, concave positions between ridges on basalt plains
Slope: 2 to 4 percent
Typical profile:
0 to 5 inches—brown silt loam
5 to 15 inches—yellowish brown silt loam
15 to 23 inches—light yellowish brown silt loam
23 to 28 inches—very pale brown silt loam
28 to 29 inches—white, lime- and silica-cemented hardpan
29 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 39 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 28 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Soils that are similar to Power silt loam but are deep to bedrock and are in basins (10 percent)
- Minveno loam on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Rock outcrop, hazard of water erosion, depth to a hardpan and to bedrock, and low and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Starbuck soil—basin big sagebrush and bluebunch wheatgrass; McPan soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil and the areas of Rock outcrop.
- The very low and low available water capacity of the Starbuck and McPan soils limit the selection of species suitable for seeding.
- Installation of stock water pipelines is limited by the areas of Rock outcrop and the depth to bedrock in the Starbuck and McPan soils.
- Suitable management practices are needed to overcome the hazard of water erosion.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6; McPan soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6

183—Starbuck-Sidlake-Rock outcrop complex, 2 to 15 percent slopes

Composition

Starbuck fine sandy loam and similar inclusions—35 percent
Sidlake fine sandy loam and similar inclusions—25 percent
Rock outcrop—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,700 to 4,600 feet

Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Starbuck Soil

Position on landscape: Convex tops on basalt plains
Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 16 inches—yellowish brown loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Sidlake Soil

Position on landscape: Side slopes and concave areas on basalt plains
Slope: 2 to 12 percent
Typical profile:
0 to 3 inches—grayish brown fine sandy loam
3 to 8 inches—yellowish brown loam
8 to 18 inches—yellowish brown sandy clay loam
18 to 24 inches—yellowish brown loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Rock Outcrop

Position on landscape: Pressure ridges and short, steep side slopes
Kind of rock: Basalt

Contrasting Inclusions

- Paulville loam in depressions and drainageways (10 percent)
- Starbuck silt loam on convex tops (5 percent)
- Taunton fine sandy loam on mounds (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, depth to bedrock, very low and low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Starbuck and Sidlake soils—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
- The very low and low available water capacity limit the selection of species suitable for seeding.
- Seeding and mechanical treatment are limited by the areas of Rock outcrop.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil and the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6; Sidlake soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

184—Starhope-Polecreek-Mug complex, 1 to 12 percent slopes

Composition

Starhope silt loam and similar inclusions—50 percent
Polecreek very cobbly silt loam and similar inclusions—20 percent
Mug extremely stony loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 5,000 to 5,800 feet
Average annual precipitation: About 14 inches
Average annual air temperature: About 45 degrees F
Frost-free period: About 85 days

Characteristics of the Starhope Soil

Position on landscape: Smooth, gently sloping areas on basalt plains
Typical profile:
0 to 9 inches—grayish brown and brown silt loam
9 to 17 inches—brown silty clay loam
17 to 25 inches—brown silty clay
25 inches—fractured basalt
Depth class: Moderately deep

Drainage class: Well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Polecreek Soil

Position on landscape: Eroded drainageways and ridges on basalt plains
Typical profile:
0 to 8 inches—dark grayish brown very cobbly silt loam
8 to 16 inches—brown extremely cobbly clay loam
16 inches—fractured basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 10 to 20 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight to severe

Characteristics of the Mug Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 8 inches—dark grayish brown and brown extremely stony loam
8 to 16 inches—brown extremely cobbly silty clay
16 to 24 inches—yellowish brown extremely cobbly silty clay loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Soils that are similar to the Starhope soil but are very deep and are in drainageways and basins (10 percent)
- Rock outcrop scattered throughout (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, stones in the surface layer, very slow and slow permeability, shallow depth to bedrock, and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Starhope soil—mountain big sagebrush and Idaho fescue; Polecreek soil—alkali sagebrush and Idaho fescue; Mug soil—mountain big sagebrush and Idaho fescue
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The very slow and slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
- Seeding and mechanical treatment are limited by the stones in the surface layer of the Mug soil.
- The low available water capacity of the Polecreek and Mug soils limits the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Polecreek soil.

Interpretive Groups

Capability classification: IIIe, nonirrigated
Range site: Starhope soil—010AY004ID Loamy 12-16 ARTRV/FEID; Polecreek soil—010AY001ID Stony Clay 12-16 ARARL/FEID; Mug soil—010AY031ID Bouldery Loam 12-16 ARTRV/FEID

185—Taunton loamy fine sand, 1 to 4 percent slopes

Composition

Taunton loamy fine sand and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,900 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 115 days

Characteristics of the Taunton Soil

Position on landscape: Smooth areas on basalt plains
Typical profile:
0 to 10 inches—brown loamy fine sand
10 to 17 inches—pale brown fine sandy loam

17 to 27 inches—pale brown and very pale brown fine sandy loam
27 to 56 inches—white, lime- and silica-cemented hardpan
56 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 27 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Chijer loamy fine sand in concave positions (10 percent)
- Minveno loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a cemented pan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

186—Taunton very fine sandy loam, 0 to 3 percent slopes

Composition

Taunton very fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Position on landscape: Basalt plains
Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 25 inches—yellowish brown and light yellowish brown very fine sandy loam
25 to 38 inches—light yellowish brown and very pale brown fine sandy loam
38 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Very slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Ticeska very fine sandy loam in concave positions (10 percent)
- Minveno loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Depth to a hardpan, low available water capacity, and hazard of wind erosion

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.

• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan.
• Irrigation water management is needed to overcome the low available water capacity.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

187—Taunton-Bahem-Paulville complex, 4 to 8 percent slopes

Composition

Taunton very fine sandy loam and similar inclusions—50 percent
Bahem very fine sandy loam and similar inclusions—20 percent
Paulville loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,350 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Smooth, slightly convex areas on buttes
Typical profile:
0 to 9 inches—brown very fine sandy loam
9 to 18 inches—pale brown very fine sandy loam
18 to 25 inches—pale brown loam
25 to 33 inches—very pale brown sandy loam
33 to 41 inches—very pale brown, lime- and silica-cemented hardpan
41 to 59 inches—light brownish gray and light yellowish brown loamy fine sand
59 to 67 inches—very pale brown sandy loam
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 33 inches
Runoff: Medium
Hazard of erosion: By water—moderate; by wind—moderate

Characteristics of the Bahem Soil

Position on landscape: Slightly convex areas on buttes
Typical profile:
0 to 11 inches—brown and pale brown very fine sandy loam
11 to 41 inches—very pale brown silt loam and very fine sandy loam
41 to 60 inches—very pale brown very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Medium
Hazard of erosion: By water—moderate; by wind—moderate

Characteristics of the Paulville Soil

Position on landscape: Concave areas on buttes
Slope: 4 to 6 percent
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 47 inches—light gray and pale brown loam and silt loam
47 to 64 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Medium

Hazard of erosion: By water—moderate; by wind—moderate

Contrasting Inclusions

• Soils that are similar to the Bahem soil but do not have carbonates and are in drainageways (5 percent)
• Chijer very fine sandy loam in concave positions (5 percent)
• Snowmore fine sandy loam on ridges (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind and water erosion and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

188—Taunton-Chijer loamy fine sands, 1 to 4 percent slopes

Composition

Taunton loamy fine sand and similar inclusions—50 percent
Chijer loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 9 inches—brown and pale brown loamy fine sand
9 to 29 inches—very pale brown fine sandy loam
29 to 43 inches—white, lime- and silica-cemented hardpan
43 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Chijer Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 8 inches—brown and pale brown loamy fine sand
8 to 39 inches—pale brown and very pale brown very fine sandy loam
39 to 46 inches—light yellowish brown loam
46 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches

Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Ticeska loamy fine sand in convex positions (5 percent)
• Minveno very fine sandy loam in convex positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

189—Taunton-Chijer very fine sandy loams, 1 to 4 percent slopes

Composition

Taunton very fine sandy loam and similar inclusions—45 percent
Chijer very fine sandy loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,300 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 31 inches—light yellowish brown very fine sandy loam
31 to 38 inches—very pale brown fine sandy loam
38 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Chijer Soil

Position on landscape: Slightly concave areas on basalt plains
Typical profile:
0 to 10 inches—brown and pale brown very fine sandy loam
10 to 15 inches—pale brown silt loam
15 to 51 inches—pale brown and very pale brown very fine sandy loam
51 to 55 inches—very pale brown sandy loam
55 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 55 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

- Ticeska very fine sandy loam in convex positions (10 percent)
- Minveno very fine sandy loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion and depth to a hardpan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

190—Taunton-Kecko complex, 1 to 4 percent slopes

Composition

Taunton loamy fine sand and similar inclusions—50 percent
Kecko loamy fine sand and similar inclusions—35 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 9 inches—brown loamy fine sand
9 to 29 inches—very pale brown fine sandy loam
29 to 43 inches—white, lime- and silica-cemented hardpan
43 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 29 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Kecko Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 14 inches—brown and yellowish brown loamy fine sand
14 to 27 inches—yellowish brown fine sandy loam
27 to 46 inches—pale brown and very pale brown fine sandy loam
46 to 61 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 46 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Wako loamy fine sand on concave side slopes (5 percent)
- Wendell loamy fine sand in convex positions (5 percent)
- Ackelton fine sand in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

191—Taunton-Paulville complex, 2 to 15 percent slopes

Composition

Taunton silt loam and similar inclusions—50 percent
Paulville loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 105 days

Characteristics of the Taunton Soil

Position on landscape: Convex tops and side slopes of buttes
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silt loam
10 to 32 inches—white loam
32 to 44 inches—very pale brown, lime- and silica-cemented hardpan
44 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Paulville Soil

Position on landscape: Depressions and drainageways on basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—pale brown clay loam
30 to 33 inches—very pale brown silt loam
33 to 50 inches—light gray and pale brown loam and silt loam
50 to 64 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Rock outcrop and Starbuck silt loam on ridges (10 percent)
• Chijer silt loam on mounds (10 percent)

Use and Management

Major use: Rangeland

Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the Taunton soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Taunton and Paulville soils—011AY009ID Loamy 8-12 ARTRT/PSSP6

192—Taunton-Rehfield complex, 2 to 10 percent slopes

Composition

Taunton silt loam and similar inclusions—40 percent
Rehfield sandy loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,300 to 4,700 feet
Average annual precipitation: About 11 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Taunton Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 5 inches—brown silt loam
5 to 10 inches—yellowish brown silt loam
10 to 25 inches—very pale brown loam
25 to 32 inches—white loam
32 to 44 inches—very pale brown, lime- and silica-cemented hardpan
44 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Rehfield Soil

Position on landscape: Depressions and drainageways on basalt plains
Slope: 2 to 6 percent
Typical profile:
0 to 10 inches—brown and yellowish brown sandy loam
10 to 18 inches—yellowish brown loam
18 to 25 inches—light yellowish brown loam
25 to 60 inches—pale brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Contrasting Inclusions

• Starbuck silt loam on ridgetops (10 percent)
• Rock outcrop on ridgetops (10 percent)
• Chijer silt loam on mounds (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Taunton soil—Wyoming big sagebrush and bluebunch wheatgrass; Rehfield soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity of the Taunton soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Taunton soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Rehfield soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

193—Taunton-Ticeska loamy fine sands, 1 to 4 percent slopes

Composition

Taunton loamy fine sand and similar inclusions—50 percent
Ticeska loamy fine sand and similar inclusions—40 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 9 inches
Average annual air temperature: About 50 degrees F
Frost-free period: About 115 days

Characteristics of the Taunton Soil

Position on landscape: Slightly concave areas on basalt plains
Typical profile:
0 to 30 inches—yellowish brown loamy fine sand
30 to 37 inches—very pale brown fine sandy loam
37 to 58 inches—very pale brown, lime- and silica-cemented hardpan
58 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 37 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Ticeska Soil

Position on landscape: Slightly convex areas on basalt plains
Typical profile:
0 to 9 inches—yellowish brown loamy fine sand
9 to 13 inches—light yellowish brown loamy fine sand
13 to 22 inches—very pale brown fine sandy loam
22 to 24 inches—very pale brown, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 22 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Minveno very fine sandy loam in convex positions (5 percent)
- Chijer loamy fine sand in concave positions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low and very low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil and the depth to the hardpan and to bedrock in the Ticeska soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity of the Taunton soil and the very low available water capacity of the Ticeska soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil and the depth to the hardpan and to bedrock in the Ticeska soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Irrigation water management is needed to overcome the low available water capacity of the Taunton soil and the very low available water capacity of the Ticeska soil.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

194—Taunton-Ticeska very fine sandy loams, 1 to 4 percent slopes

Composition

Taunton very fine sandy loam and similar inclusions—55 percent
Ticeska very fine sandy loam and similar inclusions—35 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 31 inches—light yellowish brown very fine sandy loam
31 to 38 inches—very pale brown fine sandy loam
38 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Ticeska Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—pale brown very fine sandy loam
6 to 13 inches—very pale brown silt loam
13 to 21 inches—very pale brown fine sandy loam
21 to 26 inches—very pale brown cobbly fine sandy loam
26 to 39 inches—white, lime- and silica-cemented hardpan
39 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 26 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Minveno very fine sandy loam in convex positions (5 percent)
• Chijer fine sandy loam in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil and the depth to the hardpan and to bedrock in the Ticeska soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton and Ticeska soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton soil and the depth to the hardpan and to bedrock in the Ticeska soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Taunton and Ticeska soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

195—Taunton-Ticeska-Chijer complex, 4 to 12 percent slopes

Composition

Taunton very fine sandy loam and similar inclusions—40 percent
Ticeska very fine sandy loam and similar inclusions—25 percent
Chijer very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,400 to 3,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Taunton Soil

Position on landscape: Convex areas on side slopes of buttes
Typical profile:
0 to 9 inches—brown very fine sandy loam
9 to 36 inches—brown and very pale brown very fine sandy loam
36 to 49 inches—white, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 36 inches
Runoff: Medium or rapid
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Ticeska Soil

Position on landscape: Convex areas on side slopes of buttes
Slope: 8 to 12 percent
Typical profile:
0 to 7 inches—brown very fine sandy loam
7 to 19 inches—brown and very pale brown silt loam and very fine sandy loam
19 to 23 inches—very pale brown cobbly loam
23 to 24 inches—white, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 23 inches
Runoff: Medium or rapid
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Chijer Soil

Position on landscape: Concave areas on side slopes of buttes
Slope: 4 to 8 percent
Typical profile:
0 to 7 inches—brown very fine sandy loam
7 to 18 inches—pale brown very fine sandy loam
18 to 49 inches—very pale brown very fine sandy loam
49 to 60 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 49 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Contrasting Inclusions

• Minveno cobbly fine sandy loam in convex positions (12 percent)
• Quincy fine sand in concave positions (3 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans

Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

196—Terracecreek-Gaibson complex, 2 to 20 percent slopes

Composition

Terracecreek very channery loam and similar inclusions—45 percent
Gaibson extremely gravelly coarse sandy loam and similar inclusions—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 4,700 to 5,900 feet
Average annual precipitation: About 13 inches
Average annual air temperature: About 44 degrees F
Frost-free period: About 85 days

Characteristics of the Terracecreek Soil

Position on landscape: Concave areas on side slopes directly below structural benches on foothills
Typical profile:
0 to 4 inches—grayish brown very channery loam
4 to 10 inches—yellowish brown very channery loam
10 to 24 inches—light yellowish brown extremely channery loam
24 inches—highly fractured, welded tuff
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Characteristics of the Gaibson Soil

Position on landscape: Structural benches on foothills
Typical profile:
0 to 2 inches—brown extremely gravelly coarse sandy loam
2 to 13 inches—yellowish brown very gravelly loam
13 to 19 inches—dark yellowish brown extremely gravelly clay loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 14 to 20 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

• Fergie gravelly loam in concave positions (10 percent)
• Rock outcrop on ridges (5 percent)
• Molyneux loam in drainageways (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Very low available water capacity, hazard of water erosion, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Terracecreek soil—mountain big sagebrush and bluebunch wheatgrass; Gaibson soil—low sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• Construction of fences and distribution of livestock

are limited by the shallow depth to bedrock in the Gaibson soil.
• The very low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: IVe, nonirrigated
Range site: Terracecreek soil—010AY021ID South Slope Fractured 12-16 ARTRV/PSSP6; Gaibson soil—010AY007ID Shallow Stony Loam 8-16 ARAR8/PSSP6

197—Ticeska-Chijer-Taunton complex, 1 to 6 percent slopes

Composition

Ticeska very fine sandy loam and similar inclusions—40 percent
Chijer very fine sandy loam and similar inclusions—30 percent
Taunton very fine sandy loam and similar inclusions—15 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ticeska Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 7 inches—brown very fine sandy loam
7 to 13 inches—yellowish brown very fine sandy loam
13 to 25 inches—pale brown fine sandy loam
25 to 31 inches—white, lime- and silica-cemented hardpan
31 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 25 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Chijer Soil

Position on landscape: Concave areas on basalt plains
Slope: 1 to 4 percent
Typical profile:
0 to 6 inches—brown very fine sandy loam
6 to 19 inches—very pale brown and pale brown loam
19 to 29 inches—very pale brown and pale brown very fine sandy loam and silt loam
29 to 61 inches—pale brown and light yellowish brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Strongly cemented cicada nodules at a depth of 19 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Taunton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 31 inches—light yellowish brown very fine sandy loam
31 to 38 inches—very pale brown fine sandy loam
38 to 49 inches—very pale brown lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Contrasting Inclusions

• Minveno very stony very fine sandy loam in convex positions (10 percent)
• Kecko very fine sandy loam in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind and water erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton and Ticeska soils and the depth to bedrock in the Ticeska soil.
• Irrigation water management is needed to overcome the low available water capacity of Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Taunton and Ticeska soils and the depth to bedrock in the Ticeska soil.
• Irrigation water management is needed to overcome the low available water capacity of the Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazards of wind and water erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVe, irrigated

198—Ticeska-Minveno-Taunton complex, 3 to 10 percent slopes

Composition

Ticeska very fine sandy loam and similar inclusions—40 percent
Minveno very fine sandy loam and similar inclusions—25 percent
Taunton very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ticeska Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 7 inches—brown very fine sandy loam
7 to 13 inches—yellowish brown very fine sandy loam
13 to 25 inches—pale brown fine sandy loam
25 to 31 inches—white, lime- and silica-cemented hardpan
31 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 25 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Minveno Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 3 inches—brown very fine sandy loam
3 to 13 inches—brown very fine sandy loam
13 to 17 inches—very pale brown loam
17 to 22 inches—white, lime- and silica-cemented hardpan
22 inches—lime- and silica-coated basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 17 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Taunton Soil

Position on landscape: Concave areas on basalt plains and buttes
Typical profile:
0 to 9 inches—brown very fine sandy loam

9 to 31 inches—light yellowish brown very fine sandy loam
31 to 38 inches—very pale brown fine sandy loam
38 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of erosion: By water—slight or moderate; by wind—moderate

Contrasting Inclusions

- Rock outcrop on ridges (5 percent)
- Rekima very stony fine sandy loam on ridges (5 percent)
- Chijer very fine sandy loam in depressions (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind and water erosion, depth to a hardpan and to bedrock, and low and very low available water capacity

Cropland

Suitable crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans
Major management considerations:
- The shallow depth to the cemented pan in the Minveno soil restricts roots and limits the available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Minveno and Ticeska soils and the depth to the hardpan in the Taunton soil.
- Irrigation water management is needed to overcome the very low available water capacity of the Minveno soil and the low available water capacity of the Ticeska and Taunton soils.
- Suitable management practices are needed to overcome the hazards of wind and water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
- The shallow depth to the cemented pan in the Minveno soil restricts roots and limits the available water capacity.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Minveno and Ticeska soils and the depth to the hardpan in the Taunton soil.
- Irrigation water management is needed to overcome the very low available water capacity of the Minveno soil and the low available water capacity of the Ticeska and Taunton soils.
- Suitable management practices are needed to overcome the hazards of wind and water erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where corrugation or furrow irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVs, irrigated

199—Ticeska-Taunton-Minveno complex, 1 to 3 percent slopes

Composition

Ticeska very fine sandy loam and similar inclusions—35 percent
Taunton very fine sandy loam and similar inclusions—25 percent
Minveno very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Ticeska Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 7 inches—brown very fine sandy loam
7 to 22 inches—pale brown fine sandy loam
22 to 31 inches—very pale brown cobbly loam
31 to 39 inches—white, lime- and silica-cemented hardpan
39 inches—lime- and silica-coated basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Taunton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 9 inches—pale brown very fine sandy loam
9 to 31 inches—light yellowish brown very fine sandy loam
31 to 38 inches—very pale brown fine sandy loam
38 to 49 inches—very pale brown, lime- and silica-cemented hardpan
49 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Minveno Soil

Position on landscape: Convex areas on basalt plains and buttes
Typical profile:
0 to 3 inches—brown very fine sandy loam
3 to 13 inches—brown very fine sandy loam
13 to 17 inches—very pale brown loam
17 to 22 inches—white, lime- and silica-cemented hardpan
22 inches—lime- and silica-coated basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 17 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Chijer very fine sandy loam in depressions (10 percent)
• Minveno very fine sandy loam in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low and very low available water capacity

Cropland

Suitable crops: Irrigated wheat, barley, sugar beets, potatoes, corn, and dry beans
Major management considerations:
• The shallow depth to the cemented pan in the Minveno soil restricts roots and limits the available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Minveno and Ticeska soils and the depth to the hardpan in the Taunton soil.
• Irrigation water management is needed to overcome the very low available water capacity of the Minveno soil and the low available water capacity of the Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Suitable crops: Irrigated alfalfa and pasture
Major management considerations:
• The shallow depth to the cemented pan in the Minveno soil restricts roots and limits the available water capacity.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Minveno and Ticeska soils and the depth to the hardpan in the Taunton soil.
• Irrigation water management is needed to overcome the very low available water capacity of the Minveno soil and the low available water capacity of Ticeska and Taunton soils.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.

• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IVs, irrigated

200—Tschamman-Hobby-Bray complex, 2 to 8 percent slopes

Composition

Tschamman very stony silty clay loam and similar inclusions—40 percent
Hobby extremely stony silty clay and similar inclusions—25 percent
Bray silt loam and similar inclusions—15 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,900 to 5,200 feet
Average annual precipitation: About 12 inches
Average annual air temperature: About 47 degrees F
Frost-free period: About 90 days

Characteristics of the Tschamman Soil

Position on landscape: Concave midslopes of basalt plateaus and mesas
Typical profile:
0 to 3 inches—brown very stony silty clay loam
3 to 26 inches—reddish brown silty clay
26 to 30 inches—yellowish red clay
30 to 43 inches—pink, silica-cemented hardpan
43 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 30 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Hobby Soil

Position on landscape: Convex areas on basalt plateaus and mesas
Typical profile:
0 to 4 inches—very dark grayish brown extremely stony silty clay
4 to 17 inches—dark brown silty clay
17 to 21 inches—dark brown very cobbly clay
21 to 27 inches—highly weathered basalt
27 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Medium to very rapid
Hazard of water erosion: Slight or moderate

Characteristics of the Bray Soil

Position on landscape: Interfluves on basalt plateaus and mesas
Typical profile:
0 to 3 inches—pale brown silt loam
3 to 12 inches—pale brown silty clay loam
12 to 21 inches—yellowish brown clay
21 to 30 inches—reddish brown clay
30 to 61 inches—yellowish brown, silica-cemented hardpan
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Very slow
Available water capacity: Moderate
Potential rooting depth: 29 to 40 inches
Restriction to rooting depth: Silica-cemented pan at a depth of 30 inches
Runoff: Slow to rapid
Hazard of water erosion: Slight to severe

Contrasting Inclusions

• Rubbleland scattered throughout (10 percent)
• Rock outcrop scattered throughout (5 percent)
• Soils that are similar to the Hobby extremely stony silty clay but are shallow to bedrock and are on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion, very slow permeability, low available water capacity, stones in the surface layer, and shrink-swell potential

Rangeland

Dominant vegetation in potential natural plant community: Low sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the stones in the surface layer of the Tschamman and Hobby soils.
• The high shrink-swell potential and low available water capacity of the Hobby soil limit the selection of species suitable for seeding.
• The very slow permeability of the subsoil results in saturation of the surface layer in spring. Livestock

grazing should be deferred during this period to minimize soil compaction and the risk of water erosion.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.

Interpretive Groups

Capability classification: VIIs, nonirrigated
Range site: Tschamman, Hobby, and Bray soils—010AY038ID Stony Clayey 8-16 ARAR8/PSSP6

201—Tupper extremely stony fine sandy loam, 2 to 8 percent slopes

Composition

Tupper extremely stony fine sandy loam and similar inclusions—90 percent
Contrasting inclusions—10 percent

Setting

Elevation: 2,700 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Tupper Soil

Position on landscape: Undulating river terraces
Typical profile:
0 to 13 inches—brown extremely stony fine sandy loam
13 to 29 inches—yellowish brown and light yellowish brown very bouldery fine sandy loam
29 to 66 inches—yellowish brown extremely bouldery fine sandy loam and extremely bouldery loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified boulders, stones, cobbles, gravel, and sand at a depth of 29 inches
Runoff: Very slow

Contrasting Inclusions

• Kecko loamy fine sand (5 percent)
• Quincy loamy sand in depressions (5 percent)

Geographic Inclusions

• Histic Haplaquolls in low-lying positions in an area about 3 miles south of the town of Hagerman

Use and Management

Major use: Rangeland
Major management factors: Stones in the surface layer and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and installation of stock water pipelines are limited by the stones in the surface layer.
• The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIIs, irrigated and nonirrigated
Range site: 011AY011ID Stony Loam 10-12 ARTRT/PSSP6

202—Tupper extremely bouldery fine sandy loam, 2 to 8 percent slopes

Composition

Tupper extremely bouldery fine sandy loam and similar inclusions—85 percent
Contrasting inclusions—15 percent

Setting

Elevation: 2,700 to 3,000 feet
Average annual precipitation: About 8 inches
Average annual air temperature: About 51 degrees F
Frost-free period: About 130 days

Characteristics of the Tupper Soil

Position on landscape: Undulating river terraces
Typical profile:
0 to 7 inches—brown extremely bouldery fine sandy loam
7 to 30 inches—yellowish brown and light yellowish brown very bouldery fine sandy loam
30 to 66 inches—yellowish brown extremely bouldery fine sandy loam and extremely bouldery loamy fine sand
Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 60 inches or more
Restriction to rooting depth: Stratified boulders,

stones, cobbles, gravel, and sand at a depth of 30 inches
Runoff: Very slow

Contrasting Inclusions

• Kecko loamy fine sand on concave slopes (5 percent)
• Quincy fine sand on concave slopes (5 percent)
• Ephrata gravelly fine sandy loam on lower river terraces (5 percent)

Geographic Inclusions

• Histic Haplaquolls that are about 3 miles south of the town of Hagerman and are in low-lying areas

Use and Management

Major use: Rangeland
Major management factors: Boulders in the surface layer and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Seeding, mechanical treatment, and installation of stock water pipelines are limited by the boulders in the surface layer.
• The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIIs, irrigated and nonirrigated
Range site: 011AY011ID Stony Loam 10-12 ARTRT/PSSP6

203—Tusel-Dollarhide complex, 25 to 60 percent slopes

Composition

Tusel gravelly loam and similar inclusions—60 percent
Dollarhide very gravelly loam and similar inclusions—30 percent
Contrasting inclusions—10 percent

Setting

Elevation: 5,800 to 6,200 feet
Aspect: North and east
Average annual precipitation: About 18 inches
Average annual air temperature: About 40 degrees F
Frost-free period: 45 days

Characteristics of the Tusel Soil

Position on landscape: Concave areas on side slopes of foothills
Typical profile:
0 to 7 inches—grayish brown gravelly loam
7 to 41 inches—pale brown and brown very gravelly clay loam
41 to 60 inches—pale brown extremely gravelly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Dollarhide Soil

Position on landscape: Convex areas on side slopes of foothills
Typical profile:
0 to 7 inches—grayish brown and brown very gravelly loam
7 to 11 inches—yellowish brown very gravelly loam
11 to 19 inches—light yellowish brown extremely cobbly loam
19 inches—highly fractured, welded tuff
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Soils that are similar to the Dollarhide soil but have a light-colored surface layer and are on ridges (5 percent)
• Rock outcrop on ridges (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Steep slopes, hazard of water erosion, very low available water capacity, and shallow depth to bedrock

Rangeland

Dominant vegetation in potential natural plant community: Tusel soil—mountain big sagebrush and Idaho fescue; Dollarhide soil—low sagebrush and Idaho fescue

Major management considerations:
• Seeding, mechanical treatment, and distribution of livestock are limited by the steep slopes.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The very low available water capacity of the Dollarhide soil limits the selection of species suitable for seeding.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Dollarhide soil.

Interpretive Groups

Capability classification: VIIe, nonirrigated
Range site: Tusel soil—010AY008ID North Slope Loamy 16-20 ARTRV/FEID; Dollarhide soil—010AY011ID Shallow Loam 16-20 ARAR8/FEID

204—Vickery-Paulville complex, 2 to 8 percent slopes

Composition

Vickery loam and similar inclusions—45 percent
Paulville loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,100 to 4,600 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Vickery Soil

Position on landscape: Convex side slopes and ridges on basalt buttes
Typical profile:
0 to 6 inches—grayish brown loam
6 to 17 inches—pale brown loam
17 to 21 inches—very pale brown gravelly loam
21 to 41 inches—white, lime- and silica-cemented hardpan
41 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 21 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Characteristics of the Paulville Soil

Position on landscape: Drainageways and depressions in basalt buttes
Slope: 2 to 4 percent
Typical profile:
0 to 6 inches—brown loam
6 to 15 inches—yellowish brown silt loam
15 to 30 inches—light yellowish brown and pale brown clay loam and silty clay loam
30 to 33 inches—very pale brown silt loam
33 to 50 inches—light gray and pale brown loam and silt loam
50 to 60 inches—brown loamy fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow or medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Taunton loam on mounds (10 percent)
• Minveno loam in convex positions (10 percent)
• Rock outcrop in convex positions (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
• The low available water capacity of the Vickery soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Vickery and Paulville soils—011AY004ID Loamy 8-12 ARTRW8/PSSP6

205—Vickery-Taunton complex, 4 to 12 percent slopes

Composition

Vickery loam and similar inclusions—45 percent

Taunton loam and similar inclusions—30 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,300 to 4,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Vickery Soil

Position on landscape: Intermound areas and side slopes of basalt buttes
Typical profile:
0 to 6 inches—grayish brown loam
6 to 17 inches—pale brown loam
17 to 21 inches—very pale brown gravelly loam
21 to 41 inches—white, lime- and silica-cemented hardpan
41 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 21 to 27 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Taunton Soil

Position on landscape: Mounds on basalt buttes
Typical profile:
0 to 10 inches—brown loam
10 to 24 inches—light yellowish brown loam
24 to 35 inches—pale brown gravelly loam
35 to 50 inches—white, lime- and silica-cemented hardpan
50 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 38 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 35 inches
Runoff: Medium or rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Minveno loam in convex positions (10 percent)
- Paulville loam in drainageways (10 percent)
- Rock outcrop (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazard of water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Vickery soil—Wyoming big sagebrush and bluebunch wheatgrass; Taunton soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risk of water erosion.
- The low available water capacity limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Vickery soil—011AY004ID Loamy 8-12 ARTRW8/PSSP6; Taunton soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

206—Vining-Kecko-Rock outcrop complex, 2 to 12 percent slopes

Composition

Vining fine sandy loam and similar inclusions—35 percent
Kecko loamy fine sand and similar inclusions—30 percent
Rock outcrop—20 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,300 to 4,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 100 days

Characteristics of the Vining Soil

Position on landscape: Convex tops and side slopes of basalt plains
Typical profile:
0 to 6 inches—pale brown fine sandy loam
6 to 24 inches—yellowish brown fine sandy loam and sandy loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid

Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow to rapid
Hazard of erosion: By water—slight to severe; by wind—moderate

Characteristics of the Kecko Soil

Position on landscape: Depressions and drainageways in basalt plains
Slope: 2 to 8 percent
Typical profile:
0 to 5 inches—pale brown loamy fine sand
5 to 14 inches—brown fine sandy loam
14 to 30 inches—pale brown fine sandy loam
30 to 40 inches—light gray fine sandy loam
40 to 61 inches—very pale brown fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of erosion: By water—severe; by wind—moderate or severe

Characteristics of the Rock Outcrop

Position on landscape: Convex areas on basalt plains
Kind of material: Basalt

Contrasting Inclusions

• Quincy fine sand on toeslopes (5 percent)
• Walco fine sand in convex positions (5 percent)
• Starbuck fine sandy loam on convex ridges and side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, low available water capacity, and Rock outcrop

Rangeland

Dominant vegetation in potential natural plant community: Vining soil—basin big sagebrush and bluebunch wheatgrass; Kecko soil—basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity of the Vining soil limits the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the areas of Rock outcrop.
• Construction of fences and distribution of livestock are limited by the areas of Rock outcrop.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Vining soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Kecko soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

207—Vining-Kecko-Starbuck complex, 2 to 12 percent slopes

Composition

Vining fine sandy loam and similar inclusions—40 percent
Kecko loamy fine sand and similar inclusions—30 percent
Starbuck very fine sandy loam and similar inclusions—20 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,300 to 4,400 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Vining Soil

Position on landscape: Convex tops and side slopes of basalt plains
Typical profile:
0 to 3 inches—brown fine sandy loam
3 to 7 inches—yellowish brown fine sandy loam
7 to 15 inches—pale brown sandy loam
15 to 24 inches—very pale brown and light gray sandy loam and cobbly fine sandy loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of erosion: By water—moderate or severe; by wind—moderate

Characteristics of the Kecko Soil

Position on landscape: Depressions and drainageways in basalt plains
Slope: 2 to 4 percent

Typical profile:
0 to 2 inches—brown loamy fine sand
2 to 6 inches—grayish brown loamy fine sand
6 to 19 inches—brown fine sandy loam
19 to 51 inches—pale brown and very pale brown fine sandy loam
51 to 61 inches—very pale brown loamy very fine sand
61 to 66 inches—pale brown loamy very fine sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 60 inches or more
Runoff: Very slow
Hazard of erosion: By wind—severe; by water—slight

Characteristics of the Starbuck Soil

Position on landscape: Convex areas and eroded areas on basalt plains
Typical profile:
0 to 4 inches—yellowish brown and brown very fine sandy loam
4 to 17 inches—light yellowish brown and yellowish brown very fine sandy loam
17 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight to severe; by wind—moderate

Contrasting Inclusions

- Rock outcrop on convex ridgetops (5 percent)
- Taunton fine sandy loam on mounds (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion, depth to bedrock, and very low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Vining and Starbuck soils—basin big sagebrush and bluebunch wheatgrass; Kecko soil—basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
- Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
- The very low available water capacity of the Starbuck soil limits the selection of species suitable for seeding.
- Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Starbuck soil.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Vining soil—011AY009ID Loamy 8-12 ARTRT/PSSP6; Kecko soil—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8; Starbuck soil—011AY003ID Shallow Fractured 8-12 ARTRT/PSSP6

208—Vining-Paulville complex, 1 to 6 percent slopes

Composition

Vining fine sandy loam and similar inclusions—40 percent
Paulville sandy loam and similar inclusions—35 percent
Contrasting inclusions—25 percent

Setting

Elevation: 4,600 to 4,700 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 48 degrees F
Frost-free period: About 100 days

Characteristics of the Vining Soil

Position on landscape: Convex tops and side slopes of basalt plains
Typical profile:
0 to 6 inches—pale brown fine sandy loam
6 to 24 inches—yellowish brown fine sandy loam and sandy loam
24 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Slow or medium
Hazard of erosion: By water—slight or moderate; by wind—moderate

Characteristics of the Paulville Soil

Position on landscape: Depressions and drainageways in basalt plains

Slope: 1 to 3 percent
Typical profile:
0 to 7 inches—dark brown sandy loam
7 to 25 inches—brown clay loam
25 to 37 inches—brown loam
37 to 56 inches—pale brown loam
56 to 80 inches—dark yellowish brown sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: 60 inches or more
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Banbury loam in convex positions (10 percent)
• Taunton fine sandy loam on mounds (5 percent)
• Farmell silt loam in depressions (5 percent)
• Rock outcrop on ridgetops and side slopes (5 percent)

Use and Management

Major use: Rangeland
Major management factors: Hazards of wind and water erosion and low available water capacity

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risks of wind and water erosion.
• The low available water capacity of the Vining soil limits the selection of species suitable for seeding.

Interpretive Groups

Capability classification: VIe, nonirrigated
Range site: Vining and Paulville soils—011AY009ID Loamy 8-12 ARTRT/PSSP6

209—Wako-Ackelton complex, 2 to 6 percent slopes

Composition

Wako loamy fine sand and similar inclusions—60 percent
Ackelton loamy fine sand and similar inclusions—30 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Wako Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 5 inches—brown loamy fine sand
5 to 22 inches—yellowish brown sandy clay loam and clay loam
22 to 32 inches—pale brown loam
32 to 47 inches—white, lime- and silica-cemented hardpan; weakly cemented material between laminar caps
47 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—white loamy very fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Contrasting Inclusions

• Jestrick loamy fine sand in convex positions (10 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: III, irrigated

210—Wako-Harsan complex, 0 to 4 percent slopes

Composition

Wako loam and similar soils—45 percent
Harsan fine sandy loam and similar soils—35 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,900 to 4,100 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 105 days

Characteristics of the Wako Soil

Position on landscape: Convex areas on side slopes of buttes
Typical profile:
0 to 7 inches—brown loam
7 to 24 inches—yellowish brown clay loam and sandy clay loam
24 to 31 inches—very pale brown loam
31 to 51 inches—white, lime- and silica-cemented hardpan
51 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 31 inches
Runoff: Slow

Characteristics of the Harsan Soil

Position on landscape: Concave side slopes and drainageways on buttes
Typical profile:
0 to 18 inches—brown fine sandy loam
18 to 35 inches—yellowish brown sandy clay loam and clay loam
35 to 51 inches—pale brown loam
51 to 60 inches—white, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 51 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Kecko fine sandy loam in depressions (10 percent)
• Wako fine sandy loam on side slopes (10 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Wind erosion, low available water capacity, and depth to a cemented pan

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Wako soil.

• Suitable management practices are needed to overcome the hazard of wind erosion on the Harsan soil.
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion on the Harsan soil.
• Irrigation water management is needed to overcome the low available water capacity of the Wako soil.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wako soil—Wyoming big sagebrush and Thurber needlegrass; Harsan soil—basin big sagebrush and bluebunch wheatgrass
Major management considerations:
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of wind erosion.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Wako soil—011AY001ID Loamy 8-10 ARTRW8/ACTH7; Harsan soil—011AY009ID Loamy 8-12 ARTRT/PSSP6

211—Wako-Wendell-Ackelton complex, 2 to 6 percent slopes

Composition

Wako fine sandy loam and similar inclusions—35 percent
Wendell fine sandy loam and similar inclusions—25 percent
Ackelton fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—15 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Wako Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 8 inches—brown fine sandy loam
8 to 26 inches—yellowish brown clay loam and loam
26 to 36 inches—very pale brown loam
36 to 51 inches—white, lime- and silica-cemented hardpan
51 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 36 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 6 inches—brown fine sandy loam
6 to 19 inches—yellowish brown loam
19 to 21 inches—very pale brown cobbly loam
21 to 24 inches—very pale brown, lime- and silica-cemented hardpan
24 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 21 inches
Runoff: Slow
Hazard of wind erosion: moderate

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains

Typical profile:
0 to 9 inches—brown fine sandy loam
9 to 14 inches—yellowish brown fine sandy loam
14 to 25 inches—yellowish brown loam
25 to 47 inches—pale brown and very pale brown fine sandy loam
47 to 60 inches—white, lime- and silica-cemented hardpan

Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 47 inches
Runoff: Slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Rekima very stony fine sandy loam on ridges (5 percent)
• Wendell very fine sandy loam in convex positions (5 percent)
• Wako and Wendell soils that have slopes of 6 to 8 percent (5 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil and by the depth to bedrock and to the hardpan in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of Wendell and Wako soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wako soil and by the depth to bedrock and to the hardpan in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Irrigation water management is needed to overcome the low available water capacity of Wendell and Wako soils.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

212—Wendell-Ackelton complex, 1 to 4 percent slopes

Composition

Wendell fine sandy loam and similar inclusions—50 percent
Ackelton fine sandy loam and similar inclusions—30 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 105 days

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 8 inches—brown fine sandy loam
8 to 19 inches—pale brown loam
19 to 32 inches—very pale brown loam
32 to 39 inches—white, lime- and silica-cemented hardpan
39 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches

Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 11 inches—brown fine sandy loam
11 to 22 inches—brown and yellowish brown fine sandy loam
22 to 31 inches—yellowish brown sandy clay loam
31 to 39 inches—light yellowish brown loam
39 to 53 inches—very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Moderate

Contrasting Inclusions

• Wako sandy loam on side slopes (10 percent)
• Harsan fine sandy loam in concave positions (5 percent)
• Starbuck fine sandy loam near areas of Rock outcrop (3 percent)
• Rock outcrop on pressure ridges (2 percent)

Use and Management

Major uses: Cropland, pasture, and hayland
Major management factors: Hazard of wind erosion, depth to a hardpan and to bedrock, and low available water capacity

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wendell soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
• Irrigation water management is needed to overcome the low available water capacity of the Wendell soil.
• Excavation for irrigation mainlines and ditches is limited by the depth to the cemented pan and to bedrock in the Wendell soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Interpretive Groups

Capability classification: IIIe, irrigated

213—Wendell-Wako-Ackelton complex, 2 to 8 percent slopes

Composition

Wendell loamy fine sand and similar inclusions—35 percent
Wako loamy fine sand and similar inclusions—25 percent
Ackelton loamy fine sand and similar inclusions—20 percent
Contrasting inclusions—20 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free season: About 110 days

Characteristics of the Wendell Soil

Position on landscape: Convex ridges and near areas of Rock outcrop on basalt plains
Typical profile:
0 to 5 inches—brown and very pale brown loamy fine sand
5 to 12 inches—very pale brown sandy loam
12 to 32 inches—brown, yellowish brown, and pale brown sandy clay loam
32 to 35 inches—white, lime- and silica-cemented hardpan
35 inches—basalt

Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Concave and smooth areas on basalt plains
Typical profile:
0 to 2 inches—brown loamy fine sand
2 to 6 inches—light brownish gray loamy fine sand
6 to 20 inches—brown and yellowish brown sandy clay loam and clay loam
20 to 38 inches—pale brown and light yellowish brown sandy clay loam
38 to 59 inches—white, lime- and silica-cemented hardpan
59 inches—lime- and silica-coated basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 38 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Characteristics of the Ackelton Soil

Position on landscape: Concave areas on basalt plains
Typical profile:
0 to 8 inches—brown loamy fine sand
8 to 19 inches—brown and yellowish brown fine sandy loam
19 to 34 inches—yellowish brown sandy clay loam
34 to 53 inches—light yellowish brown sandy clay loam and very pale brown loam
53 to 62 inches—very pale brown, lime- and silica-cemented hardpan
62 to 76 inches—white loamy very fine sand
Depth class: Deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 43 to 58 inches
Restriction to rooting depth: Lime- and silica-cemented pan at a depth of 53 inches
Runoff: Very slow or slow
Hazard of wind erosion: Severe

Contrasting Inclusions

- Rekima extremely stony loam on ridgetops (12 percent)
- Wendell, Wako, and Ackelton soils that have slopes of 8 to 12 percent (8 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of wind erosion, low available water capacity, and depth to a hardpan and to bedrock

Cropland

Commonly grown crops: Irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity of the Wendell and Wako soils.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wendell and Wako soils and the depth to bedrock in the Wendell soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
- The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
- Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Irrigated alfalfa and pasture
Major management considerations:
- Irrigation water management is needed to overcome the low available water capacity of the Wendell and Wako soils.
- Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan in the Wendell and Wako soils and the depth to bedrock in the Wendell soil.
- Suitable management practices are needed to overcome the hazard of wind erosion.
- Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.

• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Basin big sagebrush, Indian ricegrass, and needleandthread
Major management considerations:
• Seeding is limited by the low available water capacity of the Wendell and Wako soils and the hazard of wind erosion.
• Proper distribution of livestock and installation of stock water pipelines are limited by the depth to the hardpan and to bedrock in the Wendell soil and the depth to the hardpan in the Wako soil.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Wendell, Wako, and Ackelton soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8

214—Wendell-Wako-Rekima complex, 1 to 4 percent slopes

Composition

Wendell loamy fine sand and similar inclusions—35 percent
Wako loamy fine sand and similar inclusions—30 percent
Rekima very stony fine sandy loam and similar inclusions—25 percent
Contrasting inclusions—10 percent

Setting

Elevation: 3,200 to 3,500 feet
Average annual precipitation: About 10 inches
Average annual air temperature: About 49 degrees F
Frost-free period: About 110 days

Characteristics of the Wendell Soil

Position on landscape: Convex areas on basalt plains
Typical profile:
0 to 5 inches—brown and very pale brown loamy fine sand
5 to 12 inches—very pale brown sandy loam
12 to 32 inches—brown, yellowish brown, and pale brown sandy clay loam
32 to 35 inches—white, lime- and silica-cemented hardpan
35 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Characteristics of the Wako Soil

Position on landscape: Smooth side slopes of basalt plains
Typical profile:
0 to 5 inches—brown loamy fine sand
5 to 22 inches—yellowish brown sandy clay loam and clay loam
22 to 32 inches—pale brown loam
32 to 47 inches—white, lime- and silica-cemented hardpan; weakly cemented material between laminar caps
47 inches—basalt
Depth class: Moderately deep to a hardpan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 32 inches
Runoff: Very slow
Hazard of wind erosion: Severe

Characteristics of the Rekima Soil

Position on landscape: Broad ridgetops on basalt plains
Typical profile:
0 to 3 inches—brown very stony fine sandy loam
3 to 15 inches—yellowish brown very cobbly fine sandy loam
15 to 18 inches—brown very cobbly fine sandy loam
18 to 19 inches—very pale brown, lime- and silica-cemented hardpan
19 inches—basalt
Depth class: Shallow to a hardpan
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 16 to 19 inches
Restriction to rooting depth: Lime- and silica-cemented hardpan at a depth of 18 inches
Runoff: Very slow

Contrasting Inclusions

• Ackleton loamy fine sand in depressions (5 percent)
• Rock outcrop on ridges (5 percent)

Use and Management

Major uses: Cropland, pasture, hayland, and rangeland
Major management factors: Hazard of wind erosion, low and very low available water capacity, depth to a hardpan and to bedrock, and stones in the surface layer

Cropland

Commonly grown crops: Wendell and Wako soils—irrigated wheat, barley, sugar beets, potatoes, and corn
Major management considerations:
• Most areas of the Rekima soil are not used as cropland because of the stones in the surface layer. The stones have been mechanically removed in a few areas, and these areas are used for crops.
• Irrigation water management is needed to overcome the low available water capacity of the Wendell and Wako soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Rekima soils and the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Hayland and Pasture

Commonly grown crops: Wendell and Wako soils—irrigated alfalfa and pasture; Rekima soil—irrigated pasture
Major management considerations:
• Most areas of the Rekima soil are not used as hayland and pasture because of the stones in the surface layer. The stones have been mechanically removed in a few areas, and these areas are used for irrigated pasture.
• Irrigation water management is needed to overcome the low and very low available water capacity of the soils.
• Excavation for irrigation mainlines and ditches is limited by the depth to the hardpan and to bedrock in the Wendell and Rekima soils and the depth to the hardpan in the Wako soil.
• Suitable management practices are needed to overcome the hazard of wind erosion.
• Commonly used irrigation methods include sprinkler, furrow, and corrugation systems.
• The risk of erosion is increased in areas where furrow or corrugation irrigation systems are used.
• Sprinkler irrigation is the most suitable method of applying water.

Rangeland

Dominant vegetation in potential natural plant community: Wendell and Wako soils—basin big sagebrush, Indian ricegrass, and needleandthread; Rekima soil—Wyoming big sagebrush and bluebunch wheatgrass
Major management considerations:
• The very low available water capacity of the Rekima soil and the low available water capacity of Wendell and Wako soils limit the selection of species suitable for seeding.
• Seeding and mechanical treatment are limited by the stones in the surface layer of the Rekima soil.
• Planned grazing systems that encourage the growth of ground cover help to minimize the risk of wind erosion on the Wendell and Wako soils.
• Construction of fences and distribution of livestock are limited by the shallow depth to bedrock in the Rekima soil.

Interpretive Groups

Capability classification: IIIe, irrigated, and VIe, nonirrigated
Range site: Wendell and Wako soils—011AY014ID Sand 8-12 ARTRT/ACHY-HECOC8; Rekima soil—011AY002ID Shallow Loamy 8-12 ARTRW8/PSSP6

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

About 205,476 acres, or nearly 11 percent of the survey area, would meet the requirements for prime farmland if an adequate and dependable supply of irrigation water were available.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed at the end of this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland, if irrigated, are:

1 Ackelton fine sandy loam, 0 to 2 percent slopes
2 Ackelton-Idow complex, 1 to 4 percent slopes
6 Ackelton-Wako loamy fine sands, 0 to 3 percent slopes
7 Ackelton-Wako loamy fine sands, 3 to 8 percent slopes
8 Ackelton-Wendell complex, 1 to 4 percent slopes
9 Ackelton-Wendell-Wako complex, 2 to 6 percent slopes
10 Anchustequi loam, 1 to 4 percent slopes (if drained)
14 Bahem very fine sandy loam, 0 to 4 percent slopes
22 Burch loam, 0 to 2 percent slopes
23 Burch-Dryck complex, 0 to 2 percent slopes
24 Burch-Quencheroo-Dryck complex, 0 to 2 percent slopes
31 Chijer loamy fine sand, 1 to 4 percent slopes
32 Chijer very fine sandy loam, 0 to 2 percent slopes
38 Darrah silt loam, 0 to 3 percent slopes
43 Deter silt loam, 0 to 2 percent slopes
44 Dryck-Loupence complex, 0 to 1 percent slopes
53 Ephrata fine sandy loam, 1 to 6 percent slopes
55 Fathom loamy fine sand, 1 to 4 percent slopes

56 Fathom loamy fine sand, 4 to 10 percent slopes
66 Fluvaquents-Histic Endoaquolls complex, 0 to 3 percent slopes (if drained)
76 Harsan-Schnipper complex, 1 to 4 percent slopes
77 Harsan-Snowmore-Idow complex, 1 to 4 percent slopes
81 Hoosegow sandy loam, 0 to 3 percent slopes
83 Idow-Ackelton complex, 1 to 4 percent slopes
88 Jestrick loamy fine sand, 1 to 4 percent slopes
89 Jestrick fine sandy loam, 0 to 2 percent slopes
91 Jestrick-Kecko complex, 2 to 8 percent slopes
95 Kecko loamy fine sand, 4 to 8 percent slopes
96 Kecko fine sandy loam, 0 to 2 percent slopes
97 Kecko fine sandy loam, 2 to 4 percent slopes
98 Kecko fine sandy loam, 4 to 8 percent slopes
99 Kecko fine sandy loam, hardpan substratum, 2 to 4 percent slopes
108 Lobeisner silt loam, 1 to 3 percent slopes
109 Marley silt loam, 1 to 4 percent slopes
110 Marley-Kinzie complex, 1 to 4 percent slopes
112 Marley-Schnipper complex, 1 to 4 percent slopes
113 McCarey-Beartrap complex, 1 to 6 percent slopes
122 McPan-Power complex, 1 to 3 percent slopes
139 Paulville loam, 0 to 2 percent slopes
142 Paulville-Purdam complex, 2 to 8 percent slopes
147 Power silt loam, 0 to 3 percent slopes
148 Power-McPan complex, 1 to 3 percent slopes
149 Power-Purdam complex, 1 to 4 percent slopes
151 Quencheroo-Loupence complex, 0 to 1 percent slopes
168 Simonton loam, 0 to 3 percent slopes
173 Snowmore-Idow-Harsan complex, 0 to 4 percent slopes
175 Snowmore-Purdam-Power complex, 1 to 4 percent slopes
177 Snowmore-Wako-Harsan complex, 1 to 4 percent slopes
185 Taunton loamy fine sand, 1 to 4 percent slopes
186 Taunton very fine sandy loam, 0 to 3 percent slopes
187 Taunton-Bahem-Paulville complex, 4 to 8 percent slopes
188 Taunton-Chijer loamy fine sands, 1 to 4 percent slopes
189 Taunton-Chijer very fine sandy loams, 1 to 4 percent slopes
190 Taunton-Kecko complex, 1 to 4 percent slopes
193 Taunton-Ticeska loamy fine sands, 1 to 4 percent slopes
194 Taunton-Ticeska very fine sandy loams, 1 to 4 percent slopes
195 Taunton-Ticeska-Chijer complex, 4 to 12 percent slopes
197 Ticeska-Chijer-Taunton complex, 1 to 6 percent slopes
209 Wako-Ackelton complex, 2 to 6 percent slopes
210 Wako-Harsan complex, 0 to 4 percent slopes
211 Wako-Wendell-Ackelton complex, 2 to 6 percent slopes
212 Wendell-Ackelton complex, 1 to 4 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

By Steve Thompson, soil conservationist, and Brian Miller, district conservationist, Natural Resources Conservation Service.

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed for each soil and the system of land capability classification used by the Natural Resources Conservation Service is explained.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading “Detailed Soil Map Units.” Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Approximately 200,704 acres in the survey area is used for cultivated crops and for hay and pasture. Of this, about 123,704 acres is used primarily for cultivated crops and 77,000 acres is used for hay and pasture. About 10,000 acres of hay and pasture is conservation reserve land. All crops in the survey area are irrigated.

The temperature in the survey area is highly variable, affecting the growing season and limiting the crop rotations in some areas. The crop rotations range from hay, grain, and pasture to very intense production of row crops, including potatoes, dry beans, sugar beets, cereal grains, and corn. Other major crops grown in the area include malting barley and onions. Specialty crops, such as vegetables for seed, watermelon, and mint, are grown on small acreages.

Livestock operations are very important in the survey area. They include stocker and cow-calf operations for beef production and dairy operations. The survey area supports the second highest number of dairy cows of any area in the state. Many of the cow-calf operations use private land in winter and then use public land in the northern part of the area during the grazing season. The hay, grain, and corn for silage included in the crop rotation provide additional feed for livestock in the area.

The native vegetation in areas at the low elevations consists mainly of range grasses and sagebrush. Corrugation, furrow, and sprinkler irrigation systems commonly are used in the survey area. In most areas where surface irrigation systems are used, overirrigation and irrigation water management are concerns. Use of proper management and structural practices helps to improve the effectiveness and efficiency of the surface irrigation systems.

Proper irrigation water management and use of conservation cropping systems are needed to control erosion as a result of irrigation or wind. Steep, highly erodible soils should be planted to permanent pasture or used as wildlife habitat. If these soils are cultivated, tillage should be kept to a minimum to minimize erosion and to maintain the infiltration rate and structure of the soil.

Soils that have texture of sand or loamy sand are extensive in the survey area. Because of the risk of wind erosion on these soils, crop selection is limited. Beans and beets are rarely grown. Intensive management is needed to prevent or minimize the loss of soil and crops as a result of wind erosion. Practices such as use of cover crops and crop residue, conservation tillage, mulching, and use of high residue crops in the rotation help to prevent wind erosion.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, and for engineering purposes.

In the capability system *(24)*, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability classification of the map units in this survey area is given in the section “Detailed Soil Map Units.”

Rangeland

Approximately 77 percent, or 1,373,695 acres of the survey area, is uncultivated land used primarily for the production of forage for livestock. About 72 percent, or 1,284,495 acres, is public land managed by the Bureau of Land Management; 4 percent, or 71,360 acres, is State endowment land managed by the Idaho Department of Lands; and 1 percent, or 17,840 acres, is privately owned.

The rangeland in the area is used for livestock and wildlife grazing, for recreation, and to a small extent as a valuable watershed for the Big Wood and Little Wood Rivers. Cow-calf and sheep operations contribute significantly to the economy of the survey area. The forage produced on the rangeland at the lower elevations, which receive the lower amounts of precipitation, is used primarily for grazing by livestock in spring and late in fall. The rangeland at the higher elevations, which receive the higher amounts of precipitation, is used for grazing in summer and fall.

The native vegetation in many areas of rangeland at the lower elevations has been severely depleted by excessive use and by wildfire. Even if grazing is limited, the more desirable native plants are very slow to increase because of the low precipitation in these areas. The present productivity of these areas is considerably lower than their original productivity. The productivity of the areas of rangeland at the higher elevations is close to or only slightly less than their original productivity. If properly managed, these areas will return more rapidly to their near-original production and plant composition because of the amount of precipitation received at the higher elevations.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 6 shows, for each soil that supports rangeland vegetation suitable for grazing, the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

An *ecological site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other ecological sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, ecological sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Ecological site names are used to identify the ecological sites in the area. Each ecological site name includes soil or topographic characteristics, the mean annual precipitation, and the main species in the plant community. The abbreviations used for the key indicator species in the plant community are defined in the “National List of Scientific Plant Names” *(26)*.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year’s growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 7 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

Deep canyons, open deserts, and rolling uplands provide year-round outdoor recreational opportunities for hunters, fishermen, water sports enthusiasts, picnickers, hikers, campers, sightseers, photographers, and students of nature.

Some natural areas that provide opportunities for outdoor activities are the Snake River; the Thousand Springs area, near the town of Hagerman; and the “City of the Rocks,” north of the town of Gooding. Other natural features in the area are the Mammoth and Shoshone Ice Caves, north of Shoshone, on U.S. Highway 75.

Urban recreational facilities, including parks, ballfields, playgrounds, swimming pools, tennis courts, and golf courses, are in and around the major population centers. Many public and private recreational facilities are available in the area. Most of these facilities provide services in spring, summer, and fall.

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in the table can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 10 and interpretations for dwellings without basements and for local roads and streets in table 9.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

By Frank Fink, State biologist, Natural Resources Conservation Service.

This section relates the general soil map units in the survey area to the expected occurrences of wildlife. Wildlife habitat is closely related to the capability of the soil to produce herbaceous and woody vegetation.

The survey area supports a variety of fish and wildlife, including resident mammals, birds, reptiles, amphibians, and fish and migratory avian species. A wide array of fish and wildlife are in the area because of the variety of wildlife habitat present. The foothills, deep rocky canyons, lava flows, bottomland, and scattered areas of farmland and the associated soils, precipitation, land uses, and topography provide diverse habitat.

The plant communities on the rangeland at the higher elevations consist primarily of big sagebrush, low sagebrush, Idaho fescue, and bluebunch wheatgrass. Smaller areas of aspen, serviceberry, bitterbrush, and snowberry also are scattered throughout the rangeland. The vegetation at the intermediate and low elevations is dominantly Wyoming big sagebrush, bitterbrush, rabbitbrush, Idaho fescue, and bluebunch wheatgrass.

Agricultural activity, mainly crop production, which occurs mainly throughout the southern and western portions of the survey area, adds to the diversity and richness of the habitat.

The springs, streams, and drainageways, although small in total acreage, are key to the diversity of the wildlife in the area. These riparian zones occur as linear ribbons, frequently extending through two or more major soil groups. The vegetation associated with these areas includes dense stands of willow, cottonwood, dogwood, alder, aspen, sedges, and water-tolerant grasses.

The fish and wildlife resources in the survey area are largely determined by the suitability of the habitat, which includes the supply of food, the amount of cover, and the availability of water. Habitats differ in their capacity to provide these essential elements. Some of the deficiencies are the result of characteristics of the soils, and others are the result of management. Good management practices are needed to improve the habitat for fish and wildlife. The management practices used should be integrated with the other uses of the soils.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Ungulates

Ungulates are the largest and most easily recognized animals in the survey area. Mule deer, elk, and antelope are dominant.

Mule deer occur throughout the survey area. The major summer and wintering areas are in the eastern part. Wintering areas are on the south-facing slopes in general soil map units 1, 12, and 23. The lower elevations of these general soil map units and the associated riparian areas provide food and thermal cover for deer in winter. Vegetation in these areas that is critical to their survival includes bitterbrush, serviceberry, and sagebrush.

Summer habitat is associated with rangeland and adjacent cropland throughout the survey area, in all general soil map units. Summer habitat for mule deer is characterized by a plant community of bluebunch wheatgrass, Idaho fescue, big sagebrush, low sagebrush, and areas of cropland and associated riparian areas.

Relatively small populations of elk are in the eastern part of the survey area. The highest concentrations are in the Bennett Hills area and are associated with general soil map units 12, 14, 15, and 23. Winter range for resident elk is on south-facing slopes in map units 12 and 23. Vegetation critical as habitat for elk in winter includes bitterbrush, serviceberry, and rabbitbrush.

Antelope are on the flat to rolling slopes in areas of rangeland and adjacent farmland. Antelope are associated with general soil map units 2 through 14 and 20, 22, 25, and 26. The vegetation in these areas is dominantly sagebrush and bunchgrasses.

Avians

Common upland game birds in the area include pheasant, sage grouse, gray partridge, chukar, and California quail.

Pheasant and gray partridge are the main game birds associated with the agricultural areas. Pheasant and partridge populations are dependent on undisturbed nesting cover and adequate woody vegetation to survive during the severe winters in the survey area. These birds can be found in general soil map units 1, 2, 6, 7, 10, 12, 17, 19, 20, and 22. The portions of these map units that are farmed provide limited habitat for these birds. Winter habitat is associated with woody vegetation adjacent to these map units. Riparian areas also provide vital habitat for these birds during periods of severe weather.

Sage grouse inhabit all areas of rangeland dominated by woody sagebrush vegetation, forbs, and grasses. The highest densities of grouse are associated with general soil map units 2, 3, 4, 6, 7, 9, 10, 13, 15, 19, 25, and 27. Sage grouse migrate through these areas, relying on more open sagebrush communities with abundant grasses and forbs in summer and on denser sagebrush communities the rest of the year. Because sage grouse depend on sagebrush communities, they are extremely vulnerable to land use practices that impact this vegetation.

Wild turkeys have been introduced into the survey area, and it now supports a small resident population. Riparian areas consisting dominantly of mature stands of woody vegetation are important as habitat for the turkeys. These birds are in the Snake River Canyon and are associated with general soil map unit 18.

Chukar populations are small and are associated with the rocky slopes, steep terrain, and adjacent riparian areas. Good riparian vegetation and adequate water supplies are essential for chukar habitat. Chukar are associated with general soil map units 7, 15, 18, 19, 20, and 22.

California quail inhabit the Snake River corridor. Habitat suitable for these quail is in the steep canyons, in areas of riparian bottomland, and in associated agricultural areas. General soil map unit 18 provides the best habitat for California quail.

Many nongame birds are in the survey area. The diverse habitat along the Snake River corridor, Little Wood River, Big Wood River, Clover Creek, and other smaller creeks supports the highest densities of nongame birds. Poor management of these areas reduces the diversity of plants and is detrimental to these birds. Nongame birds in the area include kingfishers, woodpeckers, larks, swallows, magpies, crows, chickadees, wrens, thrashers, thrushes, flycatchers, starlings, vireos, warblers, finches, blackbirds, tanagers, and sparrows.

Waterfowl are concentrated along the streams, rivers, reservoirs, and irrigation canals and in the wetlands throughout the survey area. The amount of waterfowl habitat is restricted by the limited wetlands in the area. Waterfowl species include Canada geese, mallard, gadwall, widgeon, teal, goldeneye, canvasback, ring-necked duck, redhead, pintail, and scaup.

The Snake River corridor provides critical breeding and wintering areas for large numbers of Canada geese and mallards. Smaller concentrations of waterfowl are associated with the creeks, canals, wetlands, and reservoirs throughout the survey area, but these areas usually have poor-quality nesting and rearing areas. Small playa wetlands in general soil map unit 12 provide breeding areas for migrating birds early in spring.

Trumpeter swans are being introduced into the survey area along the Snake River corridor. Because the mortality rate for swans is high in the historic wintering range in eastern Idaho, an effort is being made by State and Federal agencies to expand their wintering range.

Raptors are throughout the area, in all of the general soil map units. The canyons associated with general soil map units 16, 18, and 24 provide many exposed cliffs suitable for nesting for a variety of species. The Snake River Canyon also provides wintering habitat for bald eagle and rough-legged hawk. Species that use the habitat in the survey area include golden eagle, bald eagle, prairie falcon, red-tailed hawk, ferruginous hawk, rough-legged hawk, northern harrier, kestrel, burrowing owl, short-eared owl, great horned owl, and a few peregrine falcon.

Furbearers

Furbearers, such as otter, beaver, mink, raccoon, and muskrat, live in and adjacent to the major streams, creeks, and irrigation canals in the survey area. General soil map units 1 and 18, which are associated with the Snake and Big Wood Rivers, provide the most diverse habitat for these furbearers. Their populations fluctuate with the quality of the riparian and stream habitat.

Coyote, red fox, and badger are throughout the area, in all of the general soil map units. Bobcat and lion have limited range in the area, but they typically are in areas associated with minimal human disturbance. Lion sightings, although rare, are most common in areas where mule deer populations are high.

Fisheries

Fisheries in the survey area are limited to streams and the few reservoirs in the area. Lake Walcott, on the Snake River, is the largest reservoir, and it provides fishing opportunities for local and State residents. Game fish species in the reservoirs include rainbow trout, brown trout, small-mouthed bass, large-mouthed bass, perch, and crappie. Fish habitat in the reservoirs is limited because of the poor quality of the water as a result of high sedimentation and nutrient loading. Small reservoirs have a limited quantity of water throughout the year.

Stream and creek fisheries are in the Snake, Big Wood, and Little Wood Rivers; in Clover Creek; and in other tributaries that have permanent flow throughout the year. Game fish species associated with the streams and creeks are rainbow trout, brown trout, brook trout, small-mouthed bass, and large-mouthed bass. The Shoshone sculpin, which is listed as a species of special concern by the State of Idaho, also inhabits springs in the area.

A unique area of Idaho is associated with the springs in the southwestern part of the survey area. These springs, which are in general soil map units 16, 18, and 22, provide excellent-quality water for extensive trout farming.

The quality of the stream and creek fisheries is closely tied to the quality of the surrounding riparian and upland areas. Poor watershed management has led to poor-quality water and habitat. Excessive deposits of nutrients and sediment in the streams and creeks have limited the aquatic resources in the survey area. Some portions of the rivers and creeks presently do not meet the criteria designated by Idaho for spawning by salmonid and for use by cold-water biota.

Threatened and Endangered Species

Two threatened or endangered species, the bald eagle and peregrine falcon, use the survey area at certain times of the year; however, they are not known to nest in the area. Bald eagle winter along the Snake River, feeding in areas associated with reservoirs, streams, and creeks. General soil map unit 18 correlates to the major wintering areas for bald eagle. Peregrine falcon are not known to nest in the survey area either; however, the canyons associated with the Snake River have the potential to provide nesting areas for these birds. All of the general soil map units have potential habitat for peregrine falcon.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 9 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 10 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 11 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 12 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 13 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading “Taxonomic Units and Their Morphology.”

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. “Loam,” for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, “gravelly.” Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 14 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.

8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 15 gives estimates of various water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are the depth to the seasonal high water table; the kind of water table—that is, perched, apparent, or artesian; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone. An *artesian* water table is under hydrostatic head, generally below an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. “More than 6.0” indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

Table 16 gives estimates of various soil features. The estimates are used in land use planning that involves engineering considerations.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(25)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 17 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Argid (*Arg*, meaning clay, plus *id*, from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Durargids (*Dur*, meaning duripan, plus *argid*, the suborder of the Aridisols that has an argillic horizon).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Xerollic* identifies the subgroup that typifies the great group. An example is Xerollic Durargids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, mesic Xerollic Durargids.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile.

Taxonomic Units and Their Morphology

In this section, each taxonomic unit recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each unit. A pedon, a small three-dimensional area of soil, that is typical of the unit in the survey area is described. The detailed description of each soil horizon follows standards in the “Soil Survey Manual” *(23)*. Many of the technical terms used in the descriptions are defined in “Soil Taxonomy” *(25)*. Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the unit.

The map units of each taxonomic unit are described in the section “Detailed Soil Map Units.”

Ackelton Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 0 to 8 percent
Elevation: 3,200 to 4,200 feet

Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical Pedon

Ap1—0 to 8 inches; brown (10YR 5/3) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and few fine irregular pores; neutral (pH 7.1); clear smooth boundary.

Ap2—8 to 14 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; weak very fine, fine, and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; many very fine and few fine irregular pores; neutral (pH 7.2); clear wavy boundary.

BA—14 to 19 inches; yellowish brown (10YR 5/4) fine sandy loam, brown (10YR 4/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and few fine irregular pores; neutral (pH 7.0); gradual wavy boundary.

Bt1—19 to 26 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak fine, medium, and coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores and common very fine irregular pores; few faint clay films bridging sand grains; neutral (pH 6.9); gradual wavy boundary.

Bt2—26 to 34 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine, medium, and coarse subangular blocky structure; very hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores and few very fine irregular pores; few faint clay films lining pores and bridging sand grains; neutral (pH 7.3); abrupt wavy boundary.

Bk—34 to 37 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and common fine tubular pores and few very fine irregular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

2Bkq1—37 to 44 inches; very pale brown (10YR 8/3) loam, very pale brown (10YR 7/3) moist; massive; very hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores and few very fine irregular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.7); abrupt wavy boundary.

2Bkq2—44 to 53 inches; very pale brown (10YR 7/4) loam, light yellowish brown (10YR 6/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and few fine tubular pores and few very fine irregular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.7); abrupt wavy boundary.

2Bkqm—53 to 62 inches; very pale brown (10YR 8/3) indurated duripan, very pale brown (10YR 7/4) moist; continuous laminar cap; violently effervescent; gradual wavy boundary.

3Bkq—62 to 76 inches; very pale brown (10YR 8/3) loamy very fine sand, light yellowish brown (10YR 6/4) moist; massive; extremely hard, 65 percent firm and 35 percent extremely firm, nonsticky and nonplastic; common very fine and few fine tubular pores; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Fathom-Ackelton complex, 0 to 4 percent slopes
Location in survey area: About 5 miles south and 1.5 miles west of Wendell; about 600 feet east and 900 feet south of the northwest corner of sec. 32, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to duripan—43 to 58 inches
Depth to secondary calcium carbonate—25 to 38 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist

BA horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, loamy fine sand, or sandy loam

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist

Texture—sandy clay loam, fine sandy loam, or loam
Clay content—18 to 27 percent

Bk horizon:
Value—5 or 6 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, fine sandy loam, or loam

2Bkq horizon:
Hue—7.5YR or 10YR
Value—7 or 8 dry, 5 to 7 moist
Chroma—3 or 4 dry or moist
Texture—loam, sandy loam, or fine sandy loam

2Bkqm horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Thickness of laminar caps—0.5 millimeter to 3 millimeters
Distance between caps—0.5 inch to 4 inches

3Bkq horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist

Anchustequi Series

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Dissected lacustrine terraces
Parent material: Calcareous lacustrine sediment
Slope range: 1 to 12 percent
Elevation: 2,700 to 3,200 feet
Average annual precipitation: 7 to 9 inches
Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Coarse-loamy, mixed (calcareous), mesic Aquic Torriorthents

Typical Pedon

Ap—0 to 7 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots; common very fine and few fine tubular pores; slightly effervescent; strongly alkaline (pH 8.9); abrupt wavy boundary.

AC—7 to 11 inches; very pale brown (10YR 7/3) loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine irregular pores and few very fine tubular pores; slightly effervescent; very strongly alkaline (pH 9.3); abrupt smooth boundary.

C1—11 to 16 inches; white (10YR 8/2) silt loam, yellowish brown (10YR 5/4) moist; massive; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.5); abrupt smooth boundary.

C2—16 to 20 inches; white (10YR 8/2) silt loam, brown (10YR 5/3) moist; few fine distinct mottles that are light yellowish brown (10YR 6/4) moist; moderate thin platy structure parting to weak fine subangular blocky; soft, friable, slightly sticky and slightly plastic; few very fine roots; many very fine irregular pores; violently effervescent; very strongly alkaline (pH 10.4); abrupt wavy boundary.

C3—20 to 41 inches; light brownish gray (10YR 6/2) loamy very fine sand, dark brown (10YR 4/3) moist; common fine distinct mottles that are light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; few very fine roots in upper part and common very fine roots near lower boundary; many very fine irregular pores; strongly effervescent; very strongly alkaline (pH 9.8); gradual wavy boundary.

C4—41 to 51 inches; light gray (10YR 7/2) silt loam, dark brown (10YR 4/3) moist; moderate thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; few very fine and fine tubular pores; strongly effervescent; very strongly alkaline (pH 9.5); abrupt smooth boundary.

C5—51 to 60 inches; pale brown (10YR 6/3) loamy very fine sand and very fine sandy loam, dark brown (10YR 4/3) moist; single grain; soft, very friable, nonsticky and nonplastic; many very fine and fine pores; strongly effervescent; very strongly alkaline (pH 9.8).

Typical Pedon Location

Map unit in which located: Anchustequi loam, 1 to 4 percent slopes
Location in survey area: About 0.5 mile east of Hagerman; about 450 feet west and 100 feet north of the southeast corner of sec. 14, T. 7 S., R. 13 E.

Range in Characteristics

Profile:
Depth to water table—12 to 36 inches in January through July
Average annual soil temperature—52 to 54 degrees F

Reaction—strongly alkaline or very strongly alkaline

Ap horizon:
Value—5 or 6 dry
Chroma—2 to 4 dry or moist

AC horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 or 3 dry, 3 or 4 moist
Texture—loam or silty clay loam
Clay content—20 to 33 percent

C horizon:
Value—5 to 8 dry, 3 to 5 moist
Chroma—2 to 4 dry, 3 to 6 moist
Contrast of mottles—distinct or prominent
Hue of mottles—7.5YR or 10YR
Value of mottles—4 or 5 dry, 3 to 6 moist
Chroma of mottles—3 to 6 dry or moist
Texture—stratified silty clay loam to fine sand

Antelope Springs Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Fan terraces
Parent material: Alluvium
Slope range: 1 to 4 percent
Elevation: 3,000 to 3,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Natrargids

Typical Pedon

A—0 to 3 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine irregular and tubular pores; mildly alkaline (pH 7.6); electrical conductivity of 1.0 millimho per centimeter; abrupt smooth boundary.

Btk—3 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; slightly effervescent (about 10 percent calcium carbonate equivalent); very strongly alkaline (pH 9.3); disseminated lime; electrical conductivity of 2.0 millimhos per centimeter; clear wavy boundary.

Btkn1—9 to 14 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, slightly sticky and plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 10.0); electrical conductivity of 3.0 millimhos per centimeter; clear wavy boundary.

Btkn2—14 to 22 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.8); electrical conductivity of 8.0 millimhos per centimeter; clear smooth boundary.

Bkn1—22 to 29 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and fine roots and few medium roots; few fine tubular pores; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.4); electrical conductivity of 7.0 millimhos per centimeter; clear smooth boundary.

Bkn2—29 to 39 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.5); electrical conductivity of 7.0 millimhos per centimeter; gradual wavy boundary.

Bkn3—39 to 50 inches; pale brown (10YR 6/3) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.5); gradual wavy boundary.

Bkn4—50 to 64 inches; very pale brown (10YR 7/3) loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and plastic; few very fine and fine roots; common fine and medium tubular pores; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.4).

Typical Pedon Location

Map unit in which located: Antelope Springs loam, 1 to 4 percent slopes
Location in survey area: About 700 feet south and 500 feet west of the northeast corner of sec. 10, T. 5 S., R. 12 E.

Range in Characteristics

Profile:
Electrical conductivity—1 to 8 millimhos per centimeter
Average annual soil temperature—50 to 53 degrees F
Reaction—mildly alkaline to very strongly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—1 to 3 dry or moist
Sodium adsorption ratio—10 to 20

Btk horizon:
Value—5 or 6 dry
Texture—loam or clay loam
Clay content—25 to 28 percent
Sodium adsorption ratio—15 to 25

Bkn horizon:
Value—6 or 7 dry
Chroma—3 or 4 dry or moist
Texture—loam, clay loam, or sandy clay loam
Sodium adsorption ratio—15 to 25

Argixerolls

Depth class: Deep or very deep
Drainage class: Well drained
Permeability: Moderately slow or slow
Landform: Canyon escarpments
Parent material: Clay-rich colluvium and colluvial basalt over residuum derived from volcanic rock
Slope range: 30 to 65 percent
Elevation: 4,100 to 5,400 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 60 to 90 days

Taxonomic class: Argixerolls

Example Pedon

A1—0 to 5 inches; very dark grayish brown (10YR 3/2) extremely stony loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate very fine and fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores and many medium interstitial pores; trace of gravel, 5 percent cobbles, and 35 percent stones; moderately acid (pH 5.9); clear wavy boundary.

A2—5 to 22 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; moderate medium and coarse subangular blocky structure parting to strong very fine and fine granular; slightly hard, friable, sticky and plastic; common fine and medium roots; many fine and medium interstitial and tubular pores; 5 percent gravel, 10 percent cobbles, and 35 percent stones; slightly acid (pH 6.3); clear wavy boundary.

Bt1—22 to 30 inches; strong brown (7.5YR 5/6) very cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure parting to weak fine and medium granular; slightly hard, firm, sticky and plastic; common fine and medium roots; common fine and medium interstitial pores; few faint clay films on faces of peds; 10 percent gravel, 20 percent cobbles, and 5 percent stones; neutral (pH 6.7); clear wavy boundary.

Bt2—30 to 48 inches; reddish yellow (7.5YR 6/6) very cobbly clay loam, brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and medium roots; common fine and medium interstitial pores; few faint clay films on faces of peds; 10 percent gravel, 20 percent weathered cobbles, and 5 percent stones; neutral (pH 6.7); clear wavy boundary.

Bt3—48 to 60 inches; reddish yellow (7.5YR 6/6) extremely bouldery loam, brown (7.5YR 4/4) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; few fine and medium roots; few fine interstitial pores; few faint clay films on highly weathered rock fragments; 5 percent gravel, 5 percent cobbles, 30 percent stones, and 45 percent boulders; neutral (pH 6.7).

Example Pedon Location

Map unit in which located: Argixerolls, 30 to 65 percent slopes
Location in survey area: About 13 miles north and 3 miles east of Bliss; about 2,400 feet north and

1,800 feet west of the southeast corner of sec. 3, T. 4 S., R. 13 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches or more
Thickness of mollic epipedon—15 to 35 inches
Average annual soil temperature—45 to 46 degrees F

A1 and A2 horizons:
Value—2 to 4 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist
Rock fragment content—0 to 15 percent gravel, 5 to 25 percent cobbles, 20 to 40 percent stones, and 0 to 10 percent boulders

Bt1 and Bt2 horizons:
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry, 2 to 4 moist
Clay content—25 to 35 percent
Rock fragment content—10 to 20 percent gravel, 15 to 30 percent cobbles, and 5 to 15 percent stones
Texture—clay loam, sandy clay loam, very cobbly clay loam, or very cobbly sandy clay loam
Clay content—25 to 40 percent
Reaction—slightly acid or neutral

Bt3 horizon:
Rock fragment content—0 to 10 percent gravel, 5 to 15 percent cobbles, 10 to 25 percent stones, and 20 to 45 percent boulders
Texture—extremely bouldery loam or very bouldery loam
Reaction—strongly acid to neutral

Aridic Argixerolls

Depth class: Moderately deep to very deep to lacustrine sediment
Drainage class: Well drained
Permeability: Slow to moderately slow
Landform: Canyonsides
Parent material: Colluvium over residuum derived from lacustrine sediment (calcareous siltstone and diatomite)
Slope range: 30 to 65 percent
Elevation: 3,300 to 5,400 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Aridic Argixerolls

Example Pedon

A—0 to 2 inches; dark grayish brown (10YR 4/2) very stony loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; many fine and medium roots; common fine and medium tubular and irregular pores; 10 percent gravel, 15 percent cobbles, and 15 percent stones; neutral (pH 6.7)); clear wavy boundary.
Bt1—2 to 10 inches; dark grayish brown (10YR 4/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and medium roots; common fine and medium tubular and irregular pores; few faint clay films on faces of peds; 3 percent gravel, 3 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.
Bt2—10 to 22 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very firm, very sticky and very plastic; common fine and medium roots; common fine and medium irregular pores; few faint clay films on faces of peds; 3 percent gravel and 8 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.
2C—22 to 35 inches; light brownish gray (10YR 6/2) loam, brown (10YR 4/3) moist; massive; hard, very firm, slightly sticky and slightly plastic; few fine roots; few fine and medium irregular pores; moderately alkaline (pH 7.9); clear wavy boundary.
2Cr—35 inches; semiconsolidated calcareous lacustrine sediment.

Example Pedon Location

Map unit in which located: Aridic Argixerolls and Xeric Torriorthents soils, 30 to 65 percent slopes
Location in survey area: About 13 miles north of Bliss; on a west-facing canyonside on Clover Creek; 1,750 feet south and 1,200 feet west of the northeast corner of sec. 3, T. 4 S., R. 13 E.

Range in Characteristics

Profile:
Depth to lacustrine sediment—20 to 60 inches or more
Thickness of mollic epipedon—10 to 15 inches
Average annual soil temperature—47 to 50 degrees F
Reaction—neutral to very strongly alkaline

A horizon:
Value—2 to 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Clay content—20 to 24 percent
Rock fragment content—10 to 15 percent gravel,

10 to 35 percent cobbles, and 15 to 20 percent stones

Bt horizon:
Value—4 to 6 dry, 2 to 5 moist
Chroma—2 to 5 dry or moist
Texture—sandy clay loam, clay loam, clay, gravelly sandy clay loam, cobbly clay loam, or cobbly clay
Clay content—23 to 45 percent
Rock fragment content—0 to 15 percent gravel, 0 to 15 percent cobbles, and 0 to 10 percent stones

2C horizon:
Value—6 to 8 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—loam, gravelly loam, or cobbly loam
Clay content—15 to 27 percent
Calcium carbonate equivalent—0 to 25 percent
Total rock fragment content—80 to 95 percent, of which 80 to 100 percent are soft

Atomic Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Young loess reworked by water
Slope range: 2 to 8 percent
Elevation: 4,600 to 5,400 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Xerollic Calciorthids

Typical Pedon Description

A1—0 to 3 inches; pale brown (10YR 6/3) loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, friable, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; many very fine irregular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); clear smooth boundary.
A2—3 to 15 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; common fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); gradual wavy boundary.
Bk1—15 to 34 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; strong medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine tubular pores; violently effervescent (about 25 percent calcium carbonate equivalent); moderately alkaline (pH 8.4); 5 percent cobbles; gradual wavy boundary.
Bk2—34 to 46 inches; light yellowish brown (10YR 6/4) cobbly loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common very fine and fine tubular pores; 20 percent cobbles; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime and 10 percent gravel-sized, lime- and silica-cemented nodules; moderately alkaline (pH 8.4); clear smooth boundary.
2R—46 inches; lime-coated basalt.

Typical Pedon Location

Map unit in which located: Splittop-Atomic complex, 2 to 8 percent slopes
Location in survey area: About 4 miles south and 5 miles east of Antelope Lake; about 2,000 feet north and 1,000 feet east of the southwest corner of sec. 2, T. 3 S., R. 29 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to secondary calcium carbonate—7 to 24 inches
Average annual soil temperature—45 to 47 degrees F

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, or cobbly loam
Rock fragment content—0 to 25 percent
Reaction—moderately alkaline or strongly alkaline

Bahem Series

Depth class: Very deep
Drainage class: Well drained

Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Young loess reworked by water
Slope range: 0 to 30 percent
Elevation: 2,700 to 3,500 feet
Average annual precipitation: 7 to 11 inches
Average annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 140 days

Taxonomic class: Coarse-silty, mixed, mesic Xerollic Calciorthids

Typical Pedon

Ap1—0 to 6 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine, fine, and medium tubular pores and many very fine, fine, and medium irregular pores; mildly alkaline (pH 7.4); clear smooth boundary.

Ap2—6 to 11 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine and medium tubular pores and many very fine, fine, and medium irregular pores; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bkq1—11 to 18 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak thin platy structure parting to weak fine and medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and common fine tubular pores and common very fine irregular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; 5 percent strongly cemented cicada nodules and 5 percent weakly cemented cicada nodules; moderately alkaline (pH 8.4); gradual wavy boundary.

Bkq2—18 to 26 inches; very pale brown (10YR 8/3) very fine sandy loam, brown (10YR 5/3) moist; weak fine, medium, and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and irregular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; 5 percent strongly cemented cicada nodules and 15 percent weakly cemented cicada nodules; moderately alkaline (pH 8.4); clear wavy boundary.

C1—26 to 41 inches; very pale brown (10YR 7/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular and irregular pores; strongly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); gradual wavy boundary.

C2—41 to 60 inches; pale brown (10YR 6/3) loamy very fine sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine irregular pores and few very fine tubular pores; strongly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 7.9).

Typical Pedon Location

Map unit in which located: Bahem very fine sandy loam, 0 to 4 percent slopes
Location in survey area: About 1/2 mile east and 1/2 mile south of Bliss; about 400 feet east and 2,500 feet south of the northwest corner of sec. 9, T. 6 S., R. 13 E.

Range in Characteristics

Profile:
Depth to calcic horizon—7 to 20 inches
Calcium carbonate equivalent—10 to 30 percent
Average annual soil temperature—50 to 54 degrees F

Ap horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist

Bkq horizon:
Value—7 or 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or very fine sandy loam
Clay content—13 to 18 percent
Calcium carbonate equivalent—15 to 30 percent
Cicada nodules content—0 to 15 percent weakly cemented nodules and 0 to 5 percent strongly cemented nodules

C horizon:
Hue—10YR or 2.5Y
Value—6 or 7 dry

Bailing Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plains
Parent material: Loess over weathered loess

Slope range: 1 to 8 percent
Elevation: 4,250 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Haplic Durixeralfs

Typical Pedon

A1—0 to 2 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure parting to fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine vesicular pores; about 5 percent gravel and 5 percent cobbles; slightly acid (pH 6.2); clear smooth boundary.

A2—2 to 8 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; about 5 percent gravel and 5 percent cobbles; slightly acid (pH 6.3); clear wavy boundary.

E—8 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots and few medium roots; many very fine and fine tubular pores; about 5 percent gravel and 5 percent cobbles; slightly acid (pH 6.3); abrupt smooth boundary.

Btb—10 to 22 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; moderate medium columnar structure; very hard, firm, very sticky and very plastic; few very fine and fine roots matted on faces of peds; few very fine tubular pores; common distinct clay films on faces of peds and in pores; common uncoated (bleached) sand and silt particles on faces of peds; neutral (pH 7.3); gradual wavy boundary.

Btkb1—22 to 30 inches; pale brown (10YR 6/3) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; common fine roots; many very fine tubular pores; common prominent clay films on faces of peds and in pores; slightly effervescent on faces of peds (about 5 percent calcium carbonate); mildly alkaline (pH 7.4); clear wavy boundary.

Btkb2—30 to 39 inches; very pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; extremely hard, very firm, sticky and very plastic; few very fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and in pores; strongly effervescent on faces of peds (about 15 percent calcium carbonate); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

Bkqmb—39 to 60 inches; pinkish white (7.5YR 8/2) weakly cemented duripan; continuous silica caps less than 1 millimeter thick at a depth of 39 inches; weakly cemented material between caps; violently effervescent.

Typical Pedon Location

Map unit in which located: Bailing-Darrah-Rock outcrop complex, 1 to 8 percent slopes

Location in survey area: About 10 miles north and 1.5 miles east of Shoshone; about 2,480 feet east and 500 feet south of the northwest corner of sec. 18, T. 4 S., R. 18 E.

Range in Characteristics

Profile:
Depth to bedrock—60 inches or more
Depth to duripan—25 to 40 inches
Average annual soil temperature—47 to 50 degrees F
Effective moisture—additional moisture received from runoff and snowdrifts

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Clay content—16 to 20 percent
Rock fragment content—0 to 5 percent cobbles and 0 to 5 percent gravel

E horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Clay content—16 to 20 percent
Rock fragment content—0 to 5 percent cobbles and 0 to 5 percent gravel

Btb horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry; 3 to 5 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 60 percent
Texture—silty clay loam or silty clay
Rock fragment content—0 to 5 percent gravel
Reaction—slightly acid to mildly alkaline

Btkb horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist
Clay content—35 to 60 percent
Texture—silty clay loam or silty clay
Rock fragment content—0 to 5 percent gravel
Reaction—neutral to moderately alkaline
Calcium carbonate content—5 to 30 percent

Bkqmb horizon:
Calcium carbonate content—15 to 40 percent
Thickness of cemented caps—1 millimeter to 2 millimeters
Cementation between caps—weakly cemented

Banbury Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and hills
Parent material: Loess and silty alluvium
Slope range: 2 to 25 percent
Elevation: 3,200 to 4,100 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 49 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy, mixed, mesic Lithic Xerollic Haplargids

Typical Pedon

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine irregular pores; neutral (pH 7.0); abrupt wavy boundary.

Bt1—3 to 8 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; neutral (pH 7.2); abrupt smooth boundary.

Bt2—8 to 16 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; 5 percent gravel; neutral (pH 7.2); abrupt wavy boundary.

2R—16 inches; basalt.

Typical Pedon Location

Map unit in which located: Sidlake-Banbury complex, 2 to 4 percent slopes

Location in survey area: About 0.75 mile north and 0.75 mile east of Pioneer Reservoir, in Gooding County; about 1,100 feet east of the southwest corner of sec. 16, T. 5 S., R. 12 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Rock fragment content—0 to 15 percent
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—4 to 6 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—4 to 6 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—loam or clay loam
Clay content—25 to 33 percent
Gravel content—0 to 15 percent

Beartrap Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 2 to 20 percent
Elevation: 4,700 to 5,400 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Coarse-loamy, mixed, frigid Aridic Calcixerolls

Typical Pedon

A1—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine irregular pores; strongly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); abrupt smooth boundary.

A2—2 to 16 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; soft, friable, nonsticky and nonplastic; many very fine and fine irregular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear smooth boundary.

Bk1—16 to 19 inches; light yellowish brown (10YR 6/4) fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; 5 percent cobbles; strongly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bk2—19 to 43 inches; light gray (10YR 7/2) fine sandy loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, firm, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent cobbles; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk3—43 to 52 inches; white (10YR 8/2) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 10 percent cobbles; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—52 inches; basalt.

Typical Pedon Location

Map unit in which located: McCarey-Beartrap complex, 1 to 6 percent slopes

Location in survey area: About 4 miles south and 1 mile east of Rattlesnake Butte; about 2,800 feet south and 2,500 feet west of the northeast corner of sec. 31, T. 2 S., R. 28 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Thickness of mollic epipedon—10 to 16 inches
Average annual soil temperature—45 to 47 degrees F
Reaction—mildly alkaline or moderately alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—0 to 5 percent

Bk1 horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or fine sandy loam
Clay content—12 to 18 percent
Rock fragment content—0 to 5 percent

Bk2 and Bk3 horizons:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Texture—fine sandy loam or silt loam
Clay content—12 to 18 percent
Rock fragment content—5 to 15 percent

Besslen Series

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Loess and silty alluvium
Slope range: 1 to 4 percent
Elevation: 4,000 to 4,500 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durorthids

Typical Pedon

A—0 to 2 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common medium roots; common very fine irregular pores; 10 percent fine gravel-sized duripan fragments, one-half of which are indurated; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bkq1—2 to 6 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine roots; common very fine tubular pores; common very fine and few fine irregular pores; 25 percent gravel-sized duripan fragments, one-half of which are indurated; dominantly strongly effervescent with slightly effervescent areas (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); clear smooth boundary.

Bkq2—6 to 9 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots and common fine roots; common very fine tubular pores and common very fine and few fine irregular pores; 15 percent gravel-sized and 5 percent cobble-sized duripan fragments, one-half of which are indurated; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); clear smooth boundary.

Bkq3—9 to 13 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; common very fine and few fine tubular pores; few very fine irregular pores; 25 percent gravel-sized and 5 percent cobble-sized duripan fragments, one-half of which are indurated; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); abrupt wavy boundary.

2Bkq4—13 to 19 inches; very pale brown (10YR 7/3) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; discontinuous laminar cap less than 2 millimeters thick at a depth of 13 inches; massive, slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; common very fine tubular and irregular pores; 25 percent gravel-sized and 15 percent cobble-sized duripan fragments, one-half of which are indurated; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Bkqm—19 to 38 inches; white (10YR 8/2) indurated duripan; massive; violently effervescent; abrupt wavy boundary.

3R—38 inches; fractured, lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Snowmore-Besslen-Hoosegow, 1 to 4 percent slopes

Location in survey area: On Dietrich Butte, 450 feet east and 2,400 feet north of the southwest corner of sec. 11, T. 6 S., R. 19 E.

Range in Characteristics

Profile:

Depth to bedrock—24 to 40 inches
Depth to duripan—10 to 20 inches
Content of fine sand and coarser material—less than 15 percent in particle-size control section
Average annual soil temperature—50 to 53 degrees F

A horizon:

Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Rock fragment content—0 to 5 percent cobbles
Duripan fragment content—10 to 34 percent gravel-sized fragments and 0 to 5 percent cobble-sized fragments; one-half of fragments are indurated

Bkq horizon:

Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry, 3 or 4 moist
Texture—loam, silt loam, or sandy loam
Clay content—10 to 18 percent
Basalt coarse fragment content—0 to 5 percent
Duripan fragment content—10 to 25 percent gravel-sized fragments and 0 to 5 percent cobble-sized fragments; one-half of fragments are indurated
Calcium carbonate equivalent—15 to 40 percent

2Bkq horizon:

Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4 dry or moist
Texture—gravelly loam, gravelly silt loam, or gravelly sandy loam
Clay content—10 to 18 percent
Basalt coarse fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles
Duripan fragment content—30 to 50 percent, one-half of which are indurated

2Bkqm horizon:

Value—6 to 8 dry, 6 or 7 moist
Chroma—1 to 3 dry, 2 or 4 moist
Thickness of laminar caps—2 millimeters to 5 centimeters
Distance between caps—0.5 inch to 5.0 inches
Cementation between caps—strong or indurated
Rock fragment content—0 to 15 percent gravel and 0 to 25 percent cobbles
Effervescence—strong or violent

Blisshill Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plateaus and mesas
Parent material: Weathered loess
Slope range: 1 to 8 percent
Elevation: 3,900 to 5,200 feet

Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Vertic Haploxeralfs

Typical Pedon

A—0 to 2 inches; dark grayish brown (10YR 4/2) extremely stony silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and very fine granular structure; hard, very friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; many very fine tubular pores and common very fine irregular pores; 2 percent gravel, 40 percent cobbles, and 30 percent stones; common cracks 1.0 centimeter to 1.5 centimeters wide; neutral (pH 7.0); clear wavy boundary.

BAtss—2 to 5 inches; dark brown (10YR 4/3) silty clay, dark brown (10YR 3/3) moist; strong very fine granular structure; very hard, very friable, very sticky and very plastic; many very fine and fine roots and common medium and coarse roots; common very fine irregular pores; few nonintersecting slickensides and pressure faces; common cracks 1.0 centimeter to 1.5 centimeters wide; 10 percent cobbles; neutral (pH 7.0); abrupt wavy boundary.

Btss1—5 to 23 inches; dark yellowish brown (10YR 4/4) clay, dark brown (10YR 3/3) moist; massive; extremely hard, very firm, very sticky and very plastic; many very fine roots and few fine and medium roots; few very fine irregular pores; few nonintersecting slickensides and pressure faces; common cracks 1.0 centimeter to 1.5 centimeters wide; common prominent clay films on faces of peds; 2 percent fine rounded gravel; neutral (pH 7.0); gradual wavy boundary.

Btss2—23 to 34 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; massive; extremely hard, very firm, very sticky and very plastic; few fine and medium roots; few very fine, fine, and medium irregular pores; few nonintersecting slickensides and pressure faces; common cracks 1.0 centimeter to 1.5 centimeters wide; many prominent clay films on faces of peds; 2 percent fine rounded gravel; neutral (pH 7.0); abrupt smooth boundary.

2Bq—34 to 42 inches; reddish yellow (7.5YR 6/6) loam, brown (7.5YR 4/4) moist; strong very fine, fine, and medium subangular blocky structure parting to moderate fine and medium subangular blocky; very hard, extremely firm, slightly sticky and slightly plastic; very weakly silica-cemented; few very fine roots matted on tops and sides of peds; few very fine irregular pores; 2 percent gravel; neutral (pH 7.0); clear smooth boundary.

2Bqm—42 to 60 inches; brown (7.5YR 5/4) silica-cemented duripan, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to strong very fine, fine, and medium subangular blocky; extremely hard, extremely firm; few very fine irregular pores; 2 percent gravel and 10 percent cobbles.

Typical Pedon Location

Map unit in which located: Bray-Blisshill complex, 1 to 8 percent slopes

Location in survey area: About 11 miles north and 3 miles east of Bliss; about 2,000 feet south and 1,000 feet west of the northeast corner of sec. 4, T. 4 S., R. 13 E.

Range in Characteristics

Profile:
Depth to duripan—40 to 60 inches
Clay content in control section—35 to 55 percent
Presence of cracks—open July through October and closed in winter; 1 centimeter to 3 centimeters wide at a depth of 20 to 30 inches and extending upwards to the surface
Average annual soil temperature—47 to 50 degrees F
Reaction—slightly acid to mildly alkaline
Amount of nonintersecting slickensides—few to common in Btss and BAtss horizons

A Bqk horizon is present in some pedons.

A horizon:
Value—3 to 5 dry; 2 or 3 moist
Chroma—2 or 3 dry or moist

Btss horizon:
Hue—10YR or 7.5YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—3 to 5 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 55 percent
Rock fragment content—0 to 10 percent gravel and 0 to 10 percent cobbles

2Bq horizon:
Hue—5YR or 7.5YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—4 to 7 dry or moist
Calcium carbonate equivalent—0 to 5 percent
Rock fragment content—0 to 10 percent gravel and 0 to 10 percent cobbles

2Bqm horizon:
Calcium carbonate equivalent—0 to 5 percent
Cementation—weak to strong

Bray Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plateaus and mesas
Parent material: Loess over weathered loess
Slope range: 1 to 8 percent
Elevation: 3,900 to 5,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Typic Durixeralfs

Typical Pedon

A—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (7.5YR 3/3) moist; moderate thin platy structure parting to moderate very fine and fine granular; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many very fine irregular pores; slightly acid (pH 6.2); clear smooth boundary.

Bt—3 to 12 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, sticky and plastic; many fine roots; many very fine tubular pores; few faint clay films on faces of peds and lining pores; common uncoated (bleached) sand and silt particles; slightly acid (pH 6.4); clear smooth boundary.

Btb1—12 to 21 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; common fine roots; many very fine tubular pores; common distinct clay films on faces of peds and lining pores; slightly acid (pH 6.4); abrupt smooth boundary.

Btb2—21 to 30 inches; reddish brown (5YR 5/3) clay, dark brown (7.5YR 4/4) moist; moderate fine and medium prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many prominent clay films on faces of peds and in pores; neutral (pH 7.0); abrupt wavy boundary.

Bqmb—30 to 61 inches; yellowish brown (10YR 6/4), silica-cemented, indurated duripan; caps 1 millimeter to 3 millimeters thick; strongly cemented or indurated material between caps; common manganese stains in vertical fractures.

Typical Pedon Location

Map unit in which located: Bray-Blisshill complex, 1 to 8 percent slopes
Location in survey area: About 12 miles north and 3.5 miles west of Bliss; about 2,100 feet east and 100 feet south of the northwest corner of sec. 30, T. 3 S., R. 13 E.

Range in Characteristics

Profile:
Average annual soil temperature—47 to 50 degrees F
Depth to duripan—29 to 40 inches
Effective moisture—additional moisture received from runoff

A Bqkm horizon and a Bk horizon that have less than 5 percent calcium carbonate equivalent are present in some pedons.

A horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Clay content—20 to 26 percent
Rock fragment content—0 to 5 percent

Btb horizon:
Hue—5YR to 10YR
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 60 percent
Texture—silty clay loam, silty clay, or clay
Rock fragment content—0 to 5 percent
Reaction—slightly acid or neutral

Bqmb horizon:
Calcium carbonate equivalent—0 to 5 percent
Thickness of cemented plates—1 millimeter to 5 millimeters
Cementation—strongly cemented or indurated

Bruncan Series

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 1 to 8 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durargids

Typical Pedon

Ap—0 to 6 inches; brown (10YR 5/3) stony loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine and few fine irregular pores; 10 percent gravel and 5 percent stones; mildly alkaline (pH 7.5); clear smooth boundary.

Bt—6 to 11 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine irregular and tubular pores; few faint clay films on faces of peds and lining pores; 5 percent gravel and 5 percent cobbles; neutral (pH 7.3); abrupt broken boundary.

Bkq—11 to 13 inches; very pale brown (10YR 7/3) very cobbly fine sandy loam, yellowish brown (10YR 5/4) moist; weak very fine, fine, and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores and few fine and medium irregular pores; 10 percent gravel and 25 percent cobbles; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 7.9); abrupt wavy boundary.

Bkqm—13 to 18 inches; very pale brown (10YR 8/4) indurated duripan, pale brown (10YR 6/3) moist; massive; 10 percent gravel, 40 percent cobbles, and 5 percent stones; violently effervescent; abrupt wavy boundary.

2R—18 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Schnipper-Bruncan complex, 2 to 8 percent slopes

Location in survey area: About 1/2 mile west of Gooding; about 2,200 feet north and 20 feet west of the southeast corner of sec. 1, T. 6 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—13 to 37 inches
Depth to duripan—11 to 19 inches
Depth to secondary lime—5 to 17 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral to moderately alkaline

Bt horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—loam or clay loam
Clay content—22 to 33 percent

Bkq horizon:
Value—5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly fine sandy loam, very cobbly silt loam, or very cobbly very fine sandy loam

Bkqm horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Thickness of laminar caps—1 millimeter to 4 millimeters

Burch Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Stream terraces
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 3,500 to 4,750 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 50 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy, mixed, mesic Aridic Haploxerolls

Typical Pedon

Ap1—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure parting to strong fine, medium, and coarse subangular blocky; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine and fine tubular and interstitial pores; mildly alkaline (pH 7.7); abrupt smooth boundary.

Ap2—3 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; strong thin, medium, and thick platy structure; very hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; few very fine, fine, and medium tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

Bw1—7 to 13 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular and interstitial pores and few medium tubular and interstitial pores; mildly alkaline (pH 7.6); clear smooth boundary.

Bw2—13 to 21 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; common thin and medium platy structure parting to moderate fine subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular and interstitial pores and few medium tubular and interstitial pores; mildly alkaline (pH 7.8); clear smooth boundary.

Bw3—21 to 31 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate thin and medium platy structure parting to moderate very fine and fine subangular blocky; hard, very friable, slightly sticky and nonplastic; few fine and very fine roots; many fine and very fine tubular pores and few medium tubular pores; mildly alkaline (pH 7.8); gradual smooth boundary.

Bk1—31 to 56 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak medium and thick platy structure; hard, very friable, slightly sticky and nonplastic; few fine and very fine interstitial pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); gradual smooth boundary.

Bk2—56 to 60 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; weak medium and thick platy structure; hard, very friable, slightly sticky and nonplastic; few fine and very fine interstitial pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); gradual smooth boundary.

Typical Pedon Location

Map unit in which located: Burch-Quencheroo-Dryck complex, 0 to 2 percent slopes

Location in survey area: About 3 miles east of Gooding; about 700 feet south and 200 feet west of the northeast corner of sec. 2, T. 6 S., R. 15 E.

Range in Characteristics

Profile:

Thickness of mollic epipedon—10 to 20 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:

Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, or very fine sandy loam
Clay content—10 to 18 percent
Rock fragment content—0 to 5 percent

Bk horizon:

Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—loam, very fine sandy loam, silt loam, or fine sandy loam
Clay content—10 to 18 percent
Rock fragment content—0 to 5 percent

Burwill Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Landform: Foothills and canyonsides
Parent material: Colluvium derived from welded tuff or rhyolite
Slope range: 2 to 60 percent
Elevation: 4,000 to 5,200 feet
Average annual precipitation: 12 to 14 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 75 to 90 days

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Xerochrepts

Typical Pedon Description

A1—0 to 3 inches; brown (10YR 5/3) very channery loam, brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine irregular and tubular pores; 25 percent gravel and 25 percent channers; neutral (pH 6.8); clear wavy boundary.

A2—3 to 15 inches; brown (10YR 5/3) very channery loam, dark yellowish brown (10YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 30 percent gravel and 30 percent channers; neutral (pH 6.8); gradual wavy boundary.

Bw1—15 to 25 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 45 percent gravel and 20 percent channers; neutral (pH 6.8); clear wavy boundary.

Bw2—25 to 44 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; 45 percent gravel, 25 percent channers, and 10 percent flagstones; neutral (pH 6.6); abrupt broken boundary.

R—44 inches; highly fractured, welded tuff.

Typical Pedon Location

Map unit in which located: Burwill-Rock outcrop-Connet complex, 12 to 60 percent slopes

Location in survey area: About 14 miles north and 4 miles west of Gooding; about 1,300 feet east and 700 feet south of the northwest corner of sec. 27, T. 3 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Average annual soil temperature—47 to 51 degrees F
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Rock fragment content—20 to 30 percent gravel and 20 to 30 percent channers
Clay content—20 to 27 percent

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—extremely gravelly loam, extremely channery loam, very gravelly loam, or very channery loam
Rock fragment content—20 to 50 percent gravel, 20 to 30 percent channers, and 0 to 10 percent flagstones
Clay content—20 to 27 percent

Camborthids

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Alluvium
Slope range: 1 to 3 percent
Elevation: 3,500 to 4,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Lithic Xerollic Camborthids

Example Pedon

A—0 to 14 inches; light brownish gray (10YR 6/2) loamy sand, brown (10YR 5/3) moist; weak fine subangular blocky structure; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 2 percent gravel; neutral (pH 6.6); abrupt smooth boundary.

Bw—14 to 17 inches; light yellowish brown (10YR 6/4) sandy loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

2R—17 inches; basalt.

Example Pedon Location

Map unit in which located: Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes

Location in survey area: About 5 miles north and 5 miles west of Gooding; 100 feet east and 400 feet south of the northwest corner of the SE$^1/_4$ of sec. 2, T. 5 S., R. 14 E.

Range in Characteristics

Profile:
Average annual soil temperature—50 to 53 degrees F
Depth to bedrock—10 to 20 inches
Reaction—neutral or mildly alkaline

A horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, loam, or sandy loam
Rock fragment content—0 to 5 percent gravel
Clay content—13 to 17 percent

Catchell Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plains, mesas, buttes, and plateaus
Parent material: Loess over weathered loess
Slope range: 1 to 30 percent
Elevation: 3,400 to 4,200 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Xerollic Durargids

Typical Pedon

E—0 to 3 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak thin and medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many fine irregular pores; neutral (pH 7.0); abrupt wavy boundary.

Bt1—3 to 14 inches; brown (10YR 5/3) clay, dark yellowish brown (10YR 3/4) moist; moderate medium columnar structure parting to strong fine and medium angular blocky; hard, firm, very sticky and very plastic; many very fine roots; common very fine tubular pores; many distinct clay films on faces of peds and lining pores; mildly alkaline (pH 7.5); clear smooth boundary.

Bt2—14 to 17 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate fine and medium angular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots; many fine tubular pores; many distinct clay films on faces of peds and lining pores; moderately alkaline (pH 8.0); abrupt smooth boundary.

Btk—17 to 27 inches; pale brown (10YR 6/3) clay, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; few faint clay films on faces of peds and in pores; strongly effervescent (about 10 percent calcium carbonate equivalent); carbonates in masses on faces of peds; moderately alkaline (pH 8.2); clear smooth boundary.

Bk—27 to 31 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate very fine and fine angular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); common medium segregated soft lime masses; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bkqm—31 to 32 inches; white (10YR 8/2) duripan, very pale brown (10YR 8/3) moist; strong medium platy structure; indurated; very hard, very firm; violently effervescent; abrupt wavy boundary.

3R—32 inches; lime-coated, fractured basalt.

Typical Pedon Location

Map unit in which located: Catchell silt loam, 3 to 6 percent slopes

Location in survey area: About 9 miles north and 5.5 miles west of Gooding; in the SW1/4NW1/4 of sec. 20, T. 4 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—25 to 40 inches
Depth to duripan—20 to 38 inches
Depth to secondary lime—17 to 21 inches
Organic matter content (upper 15 inches)—1.0 to 1.5 percent
Average annual soil temperature—50 to 53 degrees F

E horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist

Bt and Btk horizons:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 50 percent
Texture—silty clay loam, silty clay, or clay

Bk horizon:
Value—4 to 6 moist, 6 or 7 dry
Chroma—3 or 4 dry or moist
Clay content—15 to 30 percent
Texture—loam, gravelly loam, silty clay loam, or silt loam
Rock fragment content—0 to 35 percent

2Bkqm horizon:
Cementation of pan—very strongly cemented or indurated

Chijer Series

Depth class: Deep to a duripan or very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 0 to 8 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Coarse-silty, mixed, mesic Durixerollic Calciorthids

Typical Pedon

A1—0 to 2 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak very thin and thin platy structure parting to moderate very fine and fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine roots; few very fine tubular pores and many very fine irregular pores; neutral (pH 6.9); abrupt smooth boundary.

A2—2 to 6 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate very coarse prismatic structure parting to weak thin and medium platy; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and few fine roots concentrated on faces of prisms; few very fine tubular pores and common very fine and few fine irregular pores; mildly alkaline (pH 7.4); clear smooth boundary.

Bk—6 to 11 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate very coarse prismatic structure parting to weak thin and medium platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots concentrated on faces of prisms; many very fine tubular pores and common very fine irregular pores; strongly effervescent (9 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.1); clear wavy boundary.

Bkq1—11 to 16 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular and irregular pores; violently effervescent (20 percent calcium carbonate equivalent); disseminated lime, 5 percent cicada nodules weakly cemented with lime and silica; moderately alkaline (pH 8.3); clear smooth boundary.

Bkq2—16 to 19 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; moderate thin, medium, and thick platy structure, plates are highly disturbed by cicada nodules; hard, very friable, slightly sticky and slightly plastic; common very fine roots; few very fine tubular pores and common very fine irregular pores; violently effervescent (20 percent calcium carbonate equivalent); disseminated lime, 20 percent cicada nodules strongly cemented with lime and silica and 5 percent cicada nodules weakly cemented with lime and silica; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkq3—19 to 24 inches; very pale brown (10YR 8/3) silt loam, pale brown (10YR 6/3) moist; massive; hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent (15 percent calcium carbonate equivalent); disseminated lime, 30 percent cicada nodules strongly cemented with lime and silica and 5 percent cicada nodules weakly cemented with lime and silica; moderately alkaline (pH 8.4); clear wavy boundary.

Bkq4—24 to 29 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent (15 percent calcium carbonate equivalent); disseminated lime, 35 percent lime- and silica-cemented cicada nodules; moderately alkaline (pH 8.4); gradual wavy boundary.

Bkq5—29 to 48 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; massive; very hard, very firm, slightly sticky; common very fine roots; common very fine tubular pores and few very fine and fine irregular pores; trace of rock fragments; vertical fractures; roots and lime and silica coatings in fractures; violently effervescent (15 percent calcium carbonate equivalent); disseminated lime, 35 percent lime- and silica-cemented cicada nodules; moderately alkaline (pH 8.3); gradual wavy boundary.

Bkq6—48 to 61 inches; light yellowish brown (10YR 6/4) very fine sandy loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, slightly sticky; few very fine roots; common very fine tubular pores; trace of rock fragments; vertical fractures; roots and coatings of lime and silica in fractures; violently effervescent (15 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4).

Typical Pedon Location

Map unit in which located: Ticeska-Chijer-Taunton complex, 1 to 6 percent slopes (fig. 16)

Location in survey area: About 6 miles west and 1.5 miles south of Gooding; about 2,580 feet south and 110 feet east of the northwest corner of sec. 17, T. 6 S., R. 14 E.

Range in Characteristics

Profile:

Depth to calcic horizon—6 to 23 inches
Depth to durinodes—11 to 31 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral to strongly alkaline

A Bkqm horizon is at a depth of 40 to 60 inches in some pedons.

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Calcium carbonate equivalent—0 to 15 percent

Bk horizon:
Value—6 or 7 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Texture—silt loam, very fine sandy loam, or loam
Clay content—8 to 18 percent
Calcium carbonate equivalent—6 to 30 percent

Bkq horizon:
Value—6 to 8 dry, 3 to 6 moist
Chroma—2 to 4 dry or moist
Texture—silt loam, very fine sandy loam, or loam
Clay content—8 to 18 percent
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles
Calcium carbonate equivalent—20 to 40 percent
Cemented cicada nodule content—20 to 35 percent

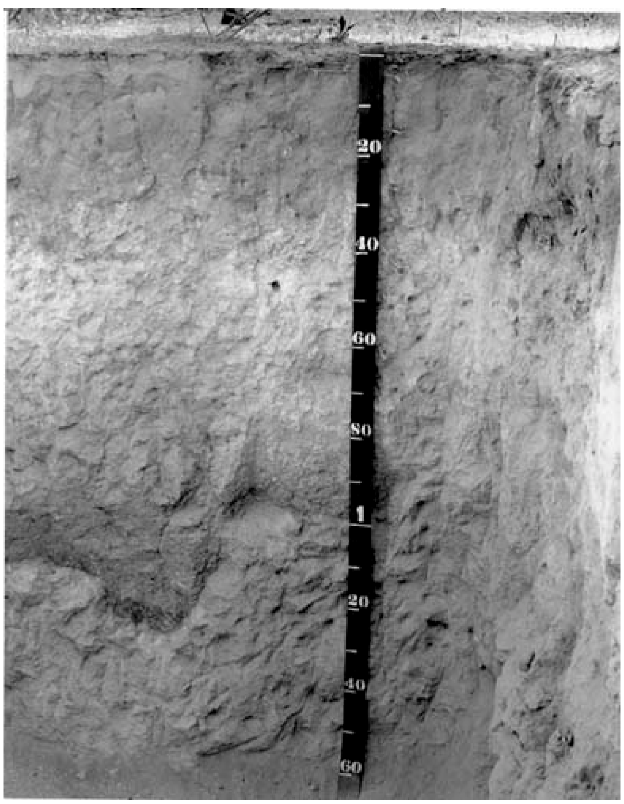


Figure 16.—Profile of Chijer very fine sandy loam in an area of Ticeska-Chijer-Taunton complex, 1 to 6 percent slopes.

Chilcott Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains, mesas, and plateaus
Parent material: Loess over weathered loess
Slope range: 1 to 10 percent
Elevation: 3,400 to 4,200 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Abruptic Xerollic Durargids

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; strong medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots and common medium and coarse roots; many fine vesicular and tubular pores; 5 percent gravel; neutral (pH 6.8); abrupt smooth boundary.

BA—2 to 5 inches; dark yellowish brown (10YR 4/4) loam, dark brown (10YR 4/3) moist; moderate medium platy structure parting to strong fine and medium granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular pores; many faint skeletans on faces of peds;

2 percent gravel; neutral (pH 7.0); abrupt smooth boundary.

Bt1—5 to 10 inches; yellowish brown (10YR 5/4) silty clay loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; hard, very friable, sticky and plastic; many fine and very fine roots and few medium roots; common very fine and fine tubular pores; few faint clay films in root channels and lining pores; common distinct skeletans on faces of peds; 2 percent gravel; neutral (pH 7.1); clear wavy boundary.

Bt2—10 to 18 inches; yellowish brown (10YR 5/4) silty clay, brown (10YR 5/3) moist; strong medium and coarse prismatic structure; hard, friable, very sticky and very plastic; many very fine and fine roots and few medium roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and lining pores; 2 percent gravel; neutral (pH 7.2); clear wavy boundary.

Btk—18 to 23 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; 2 percent gravel; strongly effervescent (about 20 percent calcium carbonate equivalent); lime filaments and masses on faces of peds; mildly alkaline (pH 7.6); gradual wavy boundary.

Bkq1—23 to 29 inches; very pale brown (10YR 8/3) loam, very pale brown (10YR 7/4) moist; moderate fine and medium subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; 2 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime and 15 percent weakly cemented nodules; mildly alkaline (pH 7.6); clear wavy boundary.

Bkq2—29 to 33 inches; very pale brown (10YR 8/3) loam, very pale brown (10YR 7/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); 10 percent duripan fragments; disseminated lime; mildly alkaline (pH 7.6); abrupt smooth boundary.

2Bkqm—33 to 60 inches; very pale brown (10YR 8/3) indurated duripan, very pale brown (10YR 7/4) moist; continuous laminar caps 1 millimeter to 5 millimeters thick; strongly cemented or indurated material between caps; upper 2 inches of duripan is fractured; few very fine and fine roots matted on top of duripan; violently effervescent; 2 percent gravel.

Typical Pedon Location

Map unit in which located: Chilcott-Linkletter complex, 2 to 25 percent slopes

Location in survey area: About 4 miles north of Bliss; about 2,510 feet north and 20 feet west of the southwest corner of sec. 6, T. 5 S., R. 13 E.

Range in Characteristics

Profile:

Depth to bedrock—more than 60 inches
Depth to duripan—20 to 40 inches
Depth to secondary lime—10 to 30 inches
Average annual soil temperature—50 to 53 degrees F

An E horizon is in some pedons.

The Bt2, Btk, and Bkq horizons are absent in some pedons.

Bt and Btk horizons:

Hue—10YR or 7.5YR
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 60 percent

Cinderhurst Series

Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Tephra
Slope range: 2 to 15 percent
Elevation: 4,600 to 5,400 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Mollic Haploxeralfs

Typical Pedon

Oi—1.0 to 0.5 inch; undecomposed plant litter.

Oe—0.5 inch to 0; partially decomposed plant litter.

A—0 to 3 inches; brown (10YR 4/3) extremely cobbly silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, medium, and coarse roots; many very fine irregular pores; about 20 percent gravel, 40 percent cobbles, and

2 percent stones; neutral (pH 6.8); abrupt smooth boundary.

Bt—3 to 8 inches; dark yellowish brown (10YR 4/4) extremely cobbly silt loam, dark yellowish brown (10YR 3/4) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine irregular pores; 20 percent gravel, 30 percent cobbles, and 15 percent stones; slightly acid (pH 6.4); abrupt smooth boundary.

2R—8 inches; basalt.

Typical Pedon Location

Map unit in which located: Lava flows-Cinderhurst complex, 2 to 15 percent slopes

Location in survey area: About 8 miles east and 6 miles south of Carey; about 1,800 feet west and 800 feet south of the northeast corner of sec. 3, T. 2 S., R. 27 E.

Range in Characteristics

Profile:
Depth to bedrock—4 to 10 inches
Average annual soil temperature—45 to 47 degrees F
Reaction—slightly acid or neutral

The O horizon is absent in some pedons.

A horizon:
Value—4 or 5 dry
Chroma—2 to 4 dry or moist

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly silt loam, very gravelly silt loam, extremely cobbly loam, or extremely cobbly silt loam
Clay content—18 to 25 percent
Rock fragment content—40 to 70 percent

Connet Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Foothills and canyonsides
Parent material: Loess, and residuum derived from welded tuff and rhyolite
Slope range: 2 to 30 percent
Elevation: 4,000 to 5,200 feet
Average annual precipitation: 12 to 14 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 75 to 90 days
Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haploxeralfs

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine interstitial and tubular pores; 40 percent gravel and 10 percent channers; neutral (pH 6.6); clear smooth boundary.

BA—2 to 8 inches; yellowish brown (10YR 5/4) very gravelly loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 40 percent gravel and 10 percent channers; slightly acid (pH 6.4); clear wavy boundary.

Btq—8 to 13 inches; yellowish brown (10YR 5/4) extremely gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 50 percent gravel and 20 percent channers; thin (less than 1 millimeter thick) silica coatings on underside of rock fragments; slightly acid (pH 6.4); abrupt wavy boundary.

R—13 inches; highly fractured, welded tuff.

Typical Pedon Location

Map unit in which located: Connet-Burwill-Rock outcrop complex, 2 to 12 percent slopes

Location in survey area: About 14 miles north and 3.5 miles west of Gooding; 2,500 feet east and 1,440 feet south of the northwest corner of sec. 26, T. 3 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Clay content in particle-size control section—20 to 30 percent
Average annual soil temperature—47 to 50 degrees F
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—25 to 40 percent gravel and 10 to 20 percent channers

BA horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam, extremely gravelly loam, or very channery loam
Rock fragment content—20 to 40 percent gravel and 15 to 30 percent channers
Clay content—20 to 26 percent

Btq horizon:
Hue 10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam, extremely gravelly loam, or very channery clay loam
Rock fragment content—20 to 40 percent gravel, 15 to 30 percent channers, and 0 to 5 percent flagstones
Clay content—25 to 30 percent

Silica coatings are absent on the underside of rock fragments in some pedons.

Cox Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 2 to 15 percent
Elevation: 4,300 to 4,700 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Ultic Haploxerolls

Typical Pedon

A1—0 to 4 inches; brown (10YR 4/3) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; loose, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine irregular pores; 5 percent gravel, 30 percent cobbles, and 15 percent stones; slightly acid (pH 6.2); clear smooth boundary.
A2—4 to 9 inches; brown (10YR 4/3) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine irregular pores; 5 percent gravel, 20 percent cobbles, and 30 percent stones; slightly acid (pH 6.2); clear wavy boundary.
Bw—9 to 12 inches; dark yellowish brown (10YR 4/4) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine irregular pores; about 5 percent gravel, 20 percent cobbles, and 30 percent stones; slightly acid (pH 6.5); abrupt smooth boundary.
2R—12 inches; basalt

Typical Pedon Location

Map unit in which located: Cox-Rehfield-Rock outcrop complex, 2 to 15 percent slopes
Location in survey area: About 14 miles east and 6 miles north of Richfield; about 3,000 feet east and 2,800 feet north of the southwest corner of sec. 29, T. 3 S., R. 22 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Average annual soil temperature—47 to 50 degrees F
Thickness of mollic epipedon—8 to 12 inches
Base saturation—less than 75 percent
Moisture regime—aridic, bordering on xeric

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist

Bw horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly fine sandy loam, extremely stony sandy loam, or very stony sandy loam
Clay content—10 to 15 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid to mildly alkaline

Darrah Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and buttes
Parent material: Loess over weathered loess
Slope range: 0 to 8 percent
Elevation: 4,250 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine-silty, mixed, mesic Typic Argixerolls

Typical Pedon

A1—0 to 2 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure parting to weak fine and medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine and common medium vesicular pores; slightly acid (pH 6.5); abrupt smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular pores; slightly acid (pH 6.5); clear smooth boundary.

BA—5 to 11 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 6.7); clear wavy boundary.

Bt1—11 to 21 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; few faint clay films lining pores; common bleached silt grains on faces of peds; neutral (pH 7.2); abrupt wavy boundary.

Bt2—21 to 27 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; few faint clay films lining pores and on faces of peds; many bleached silt grains on faces of peds; neutral (pH 6.8); clear wavy boundary.

Btb1—27 to 34 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (7.5YR 4/4) moist; moderate medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; common distinct clay films lining pores and on faces of peds; slightly acid (pH 6.3); gradual wavy boundary.

Btb2—34 to 60 inches; light yellowish brown (10YR 6/4) silty clay, dark brown (7.5YR 4/4) moist; moderate medium and coarse prismatic structure parting to strong medium and coarse subangular blocky; very hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; common distinct clay films lining pores and on faces of peds; neutral (pH 6.7).

Typical Pedon Location

Map unit in which located: Bailing-Darrah-Rock outcrop complex, 1 to 8 percent slopes

Location in survey area: About 12 miles north and 4 miles west of Shoshone; 450 feet north and 250 feet east of the southwest corner of sec. 33, T. 3 S., R. 18 E.

Range in Characteristics

Profile:
Depth to bedrock—more than 60 inches
Thickness of mollic epipedon—10 to 15 inches
Average clay content in particle-size control section—25 to 35 percent
Average annual soil temperature—47 to 50 degrees F
Reaction—slightly acid or neutral
Effective moisture—additional moisture received from runoff and snowdrifts

A BE or Bw horizon is in some pedons.

A and BA horizons:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—23 to 35 percent
Texture—silt loam or silty clay loam

Btb horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 50 percent
Texture—silty clay, clay, or silty clay loam
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles

Deerhorn Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained

Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 2 to 15 percent
Elevation: 4,500 to 4,700 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine-loamy, mixed, mesic Aridic Durixerolls

Typical Pedon

A1—0 to 2 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine irregular pores; mildly alkaline (pH 7.4); clear wavy boundary.
A2—2 to 8 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine irregular pores; mildly alkaline (pH 7.4); clear wavy boundary.
Bt—8 to 15 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; mildly alkaline (pH 7.6); clear wavy boundary.
Btk—15 to 21 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; few faint clay films on faces of peds and lining pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); abrupt wavy boundary.
2Bkqm—21 to 28 inches; white (10YR 8/2) indurated duripan; mildly alkaline (pH 7.8); violently effervescent; abrupt smooth boundary.
3R—28 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Deerhorn-Rehfield-Rock outcrop complex, 2 to 15 percent slopes
Location in survey area: About 8 miles south and 19 miles east of Carey; about 1,300 feet north and 450 feet east of the southwest corner of sec. 3, T. 3 S., R. 24 E.

Range in Characteristics

Profile:
Depth to bedrock—22 to 35 inches
Depth to duripan—20 to 30 inches
Average annual soil temperature—47 to 50 degrees F

The Btk horizon is absent in some pedons.

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt and Btk horizons:
Hue—10YR or 7.5YR
Value—4 to 8 dry, 3 to 7 moist
Chroma—2 to 4 dry or moist
Texture—loam, sandy clay loam, or sandy loam
Clay content—18 to 30 percent

2Bkqm horizon:
Hue—10YR or 7.5YR
Value—7 or 8 dry, 6 or 7 moist
Chroma—2 to 4 dry or moist
Calcium carbonate equivalent—40 to 80 percent

Deter Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Stream terraces
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 3,000 to 4,000 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Pachic Argixerolls

Typical Pedon

Ap1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 6.7); clear smooth boundary.
Ap2—3 to 8 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common

very fine and fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

A1—8 to 16 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 3/2) moist; strong medium and coarse prismatic structure parting to strong medium subangular blocky; very hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; neutral (pH 7.0); gradual wavy boundary.

A2—16 to 22 inches; grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 6.8); gradual wavy boundary.

Bt1—22 to 34 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; extremely hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; few faint clay films in pores; neutral (pH 6.7); clear wavy boundary.

Bt2—34 to 55 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to strong medium subangular blocky; extremely hard, very firm, very sticky and very plastic; few very fine, fine, and medium roots; few very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; neutral (pH 6.8); gradual wavy boundary.

Bt3—55 to 63 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure parting to moderate medium and coarse subangular blocky; extremely hard, very firm, very sticky and very plastic; few very fine roots; few very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; neutral (pH 6.7).

Typical Pedon Location

Map unit in which located: Deter silt loam, 0 to 2 percent slopes

Location in survey area: About 3.5 miles east of Gooding; 500 feet north and 100 feet east of the southwest corner of sec. 11, T. 5 S., R. 14 E.

Range in Characteristics

Profile:
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Chroma—2 or 3 dry or moist

A horizon:
Chroma—2 or 3 dry or moist
Texture—silt loam or silty clay loam

Bt horizon:
Texture—silty clay, silty clay loam, or clay
Clay content—35 to 50 percent

Dollarhide Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately rapid
Landform: Foothills
Parent material: Loess, and colluvium and residuum derived from welded tuff, rhyolite, or basalt
Slope range: 25 to 60 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: 16 to 20 inches
Average annual air temperature: 39 to 41 degrees F
Frost-free-period: 30 to 60 days

Taxonomic class: Loamy-skeletal, mixed Lithic Cryoborolls

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine irregular and tubular pores; 35 percent gravel, 10 percent cobbles, and 1 percent stones; neutral (pH 6.9); abrupt smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; many fine irregular and tubular pores; 35 percent gravel, 10 percent cobbles, and 1 percent stones; neutral (pH 7.2); clear wavy boundary.

Bw1—7 to 11 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 35 percent gravel and 10 percent cobbles; neutral (pH 7.2); gradual wavy boundary.

Bw2—11 to 19 inches; light yellowish brown (10YR 6/4) extremely cobbly loam, brown (10YR 4/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 25 percent gravel and 40 percent cobbles; mildly alkaline (pH 7.4); abrupt broken boundary.

R—19 inches; highly fractured, welded tuff.

Typical Pedon Location

Map unit in which located: Tusel-Dollarhide complex, 25 to 60 percent slopes

Location in survey area: About 16 miles north of Gooding; about 900 feet west and 500 feet south of the northeast corner of sec. 3, T. 3 S., R. 14 E.

Range in Characteristics

Profile:

Depth to bedrock—10 to 20 inches

Thickness of mollic epipedon—7 to 10 inches

Clay content in particle-size control section—8 to 18 percent

Average annual soil temperature—41 to 43 degrees F

Reaction—neutral or mildly alkaline

A horizon:

Value—4 or 5 dry

Chroma—2 or 3 dry or moist

Rock fragment content—35 to 60 percent

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very gravelly loam, very gravelly silt loam, or extremely cobbly loam

Rock fragment content—50 to 75 percent

Dryck Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate or moderately rapid in the upper 23 inches; very rapid below

Landform: Stream terraces

Parent material: Alluvium

Slope range: 0 to 2 percent

Elevation: 3,500 to 4,600 feet

Average annual precipitation: 9 to 13 inches

Average annual air temperature: 45 to 51 degrees F

Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Cumulic Haploxerolls

Typical Pedon

Ap1—0 to 3 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak thin platy structure; soft, very friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium and coarse roots; few fine and very fine vesicular pores and common very fine irregular pores; neutral (pH 7.2); abrupt smooth boundary.

Ap2—3 to 8 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate medium platy structure; hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; few fine and very fine vesicular pores and common very fine irregular pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bw1—8 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; common very fine and few fine tubular pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bw2—11 to 23 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and nonplastic; common very fine roots and few fine and medium roots; common fine and very fine tubular pores; mildly alkaline (pH 7.8); gradual wavy boundary.

2C1—23 to 28 inches; brown (10YR 5/3) fine sand, dark brown (10YR 3/3) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots and few fine and medium roots; common very fine and few fine tubular pores; moderately alkaline (pH 7.9); abrupt wavy boundary.

2C2—28 to 60 inches; multicolored sand and gravel; single grain; loose, nonsticky and nonplastic; stratified sediment that is 30 to 60 percent gravel; moderately alkaline (pH 7.9).

Typical Pedon Location

Map unit in which located: Dryck-Loupence complex, 0 to 1 percent slopes

Location in survey area: About 5 miles north and 5 miles east of Gooding, along Wood River; 200 feet east and 200 feet north of the southwest corner of sec. 7, T. 5 S., R. 16 E.

Range in Characteristics

Profile:
Depth to bedrock—60 inches or more
Thickness of mollic epipedon—20 to 36 inches
Clay content in particle-size control section—5 to 15 percent
Depth to stratified sand and gravel—23 to 36 inches
Average annual soil temperature—47 to 53 degrees F

Ap horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—very fine sandy loam, fine sandy loam, or loam
Clay content—12 to 18 percent
Rock fragment content—0 to 10 percent gravel
Reaction—neutral or mildly alkaline

2C horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—stratified fine sand to extremely gravelly fine sand
Clay content—5 to 10 percent
Rock fragment content—10 to 70 percent
Reaction—neutral to moderately alkaline

Duguesclin Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Plateaus, mesas, and basalt plains
Parent material: Weathered loess
Slope range: 1 to 6 percent
Elevation: 5,100 to 5,900 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine, montmorillonitic, frigid Chromic Durixererts

Typical Pedon

A—0 to 2 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; hard, very friable, sticky and plastic; many fine roots and few medium and coarse roots; common fine and very fine and few medium irregular pores; 15 percent gravel and 40 percent cobbles; cracks 1 centimeter to 2 centimeters wide; neutral (pH 7.0); clear broken boundary.

Bss1—2 to 11 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 3/4) moist; strong fine and very fine subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine and fine roots and few medium and coarse roots; common fine and very fine irregular pores; few intersecting slickensides; cracks 1 centimeter to 2 centimeters wide; neutral (pH 7.0); clear wavy boundary.

Bss2—11 to 22 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; very hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; common very fine and fine irregular pores and few very fine and fine tubular pores; few intersecting slickensides and pressure faces; few cracks 1 centimeter to 2 centimeters wide; neutral (pH 7.0); abrupt wavy boundary.

Bq—22 to 33 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 4/4) moist; massive; hard, friable, very sticky and very plastic; few very fine roots throughout horizon and root mat at base of horizon; common fine and very fine irregular pores; weakly silica-cemented faces of peds; few faint manganese or iron-manganese stains on faces of peds; neutral (pH 6.8); abrupt smooth boundary.

Bqm—33 to 41 inches; pink (7.5YR 7/4) duripan, brown (7.5YR 4/4) moist; massive; continuous laminar silica cap 1 millimeter thick underlain by weakly cemented material; abrupt broken boundary.

2R—41 inches; fractured, weathered basalt.

Typical Pedon Location

Map unit in which located: Schooler-Duguesclin-Willho complex, 2 to 6 percent slopes
Location in survey area: About 15 miles north of Gooding, about 1/2 mile east of the head of Burnt Willow Canyon; 80 feet north and 1,600 feet west of the southeast corner of sec. 17, T. 3 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to duripan—20 to 40 inches
Thickness of duripan—1 inch to 18 inches

Average clay content in particle-size control section—40 to 60 percent
Average annual soil temperature—45 to 47 degrees F
Reaction—slightly acid or neutral

The Bq horizon is absent in some pedons.

A horizon:
Value—4 or 5 dry
Chroma—3 or 4 dry or moist
Rock fragment content—5 to 20 percent gravel, 5 to 50 percent cobbles, and 0 to 10 percent stones

Bss horizon:
Hue—5YR to 10YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay or clay
Clay content—40 to 60 percent
Rock fragment content—0 to 10 percent gravel and 0 to 5 percent cobbles
Amount of intersecting slickensides—few to common
Presence of cracks—open in July through October and closed in winter; 1 centimeter to 3 centimeters wide at a depth of 20 to 25 inches and extending upwards to surface

Bq horizon:
Hue—7.5YR or 5YR
Value—4 to 7 dry or moist
Chroma—3 to 5 dry or moist
Texture—clay loam or clay
Clay content—35 to 60 percent

Bqm horizon:
Value—5 to 8 dry or moist
Chroma—2 to 5 dry or moist
Distance between indurated silica caps—0.5 millimeter to 3 inches
Thickness of indurated silica caps—0.5 millimeter to 2 millimeters thick
Cementation between caps—weak to strong

Elijah Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Silty alluvium
Slope range: 0 to 12 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-silty, mixed, mesic Xerollic Durargids

Typical Pedon

Ap—0 to 5 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak fine, medium, and coarse subangular blocky structure parting to moderate fine and medium granular; hard, very friable, slightly sticky and slightly plastic; common very fine roots and few medium roots; many very fine and common fine and medium interstitial pores; traces of gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—5 to 10 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong fine, medium, and coarse subangular blocky structure; very hard, friable, sticky and plastic; many very fine roots and few fine roots; common very fine and few fine and medium tubular pores and common very fine interstitial pores; few faint clay films on faces of peds and lining pores; neutral (pH 6.6); clear wavy boundary.

Bt2—10 to 15 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (10YR 4/3) moist; weak fine and medium prismatic structure parting to strong fine and medium subangular blocky; very hard, friable, sticky and plastic; many very fine roots and few fine roots; common very fine and few fine tubular pores; common faint clay films lining pores and on faces of peds; 2 percent gravel and 2 percent cobbles; neutral (pH 6.9); clear wavy boundary.

Bk1—15 to 23 inches; yellowish brown (10YR 5/4) silt loam matrix, dark yellowish brown (10YR 3/4) moist; very pale brown (10YR 8/3) lime veins, light yellowish brown (10YR 6/4) moist; moderate very fine, fine, medium, and coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; common very fine and few fine tubular pores and common very fine interstitial pores; slightly effervescent (about 15 percent calcium carbonate equivalent); mildly alkaline (pH 7.4); clear wavy boundary.

Bk2—23 to 31 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; moderate very fine, fine, and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and few fine roots, some occur as mats on laminar cap at a depth of 31 inches; common very fine and few fine tubular pores and common very fine interstitial pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bkqm1—31 to 39 inches; very pale brown (10YR 8/3) indurated duripan, very pale brown (10YR 7/4) moist; massive; extremely hard, extremely friable; common very fine and few fine interstitial pores; continuous laminar cap less than 2 millimeters thick at a depth of 36 inches; clear wavy boundary.

Bkqm2—39 to 45 inches; very pale brown (10YR 8/4) indurated duripan, light yellowish brown (10YR 6/4) moist; massive; extremely hard, extremely friable; continuous laminar cap coating cobbles and gravel at a depth of 39 inches; rock fragments are cemented into duripan and can be chipped out in pieces; abrupt wavy boundary.

2R—45 inches; basalt.

Typical Pedon Location

Map unit in which located: Elijah-McPan complex, 2 to 6 percent slopes

Location in survey area: About 3 miles north and 4 miles west of Gooding; about 400 feet east and 1,650 feet south of the northwest corner of sec. 14, T. 5 S., R. 14 E.

Range in Characteristics

Profile:

Depth to bedrock—40 to 60 inches

Depth to duripan—20 to 39 inches

Depth to secondary calcium carbonate—18 to 25 inches

Clay content in particle-size control section—26 to 35 percent

Average annual soil temperature—50 to 53 degrees F

Ap horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Reaction—neutral or mildly alkaline

Bt horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or silty clay loam

Rock fragment content—0 to 5 percent

Clay content—26 to 35 percent

Reaction—neutral or mildly alkaline

Bk horizon:

Value—5 to 7 dry, 4 to 6 moist

Chroma—3 or 4 dry or moist

Texture—silt loam or loam

Calcium carbonate equivalent—15 to 40 percent

Rock fragment content—0 to 10 percent

Clay content—12 to 26 percent

Reaction—mildly alkaline to strongly alkaline at a depth of 39 inches

Elkcreek Series

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Foothills

Parent material: Loess and residuum derived from welded tuff or rhyolite

Slope range: 1 to 25 percent

Elevation: 5,000 to 6,200 feet

Average annual precipitation: 13 to 16 inches

Average annual air temperature: 43 to 45 degrees F

Frost-free period: 60 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Ultic Argixerolls

Typical Pedon

A1—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate fine granular; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine, fine, and medium tubular and interstitial pores; 10 percent gravel; slightly acid (pH 6.2); clear smooth boundary.

BA—4 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine, fine, and medium tubular and interstitial pores; 10 percent gravel; slightly acid (pH 6.1); gradual wavy boundary.

Bt1—10 to 13 inches; brown (7.5YR 5/3) clay loam, dark brown (7.5YR 4/3) moist; weak fine subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine, medium, and coarse roots; common very fine, fine, and medium tubular pores; common faint clay films on faces of peds; slightly acid (pH 6.1); gradual wavy boundary.

Bt2—13 to 26 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/3) moist; weak medium and coarse subangular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium tubular pores; common distinct clay films on faces of peds; 10 percent gravel; slightly acid (pH 6.1); clear irregular boundary.

R—26 inches; welded tuff.

Typical Pedon Location

Map unit in which located: Elkcreek-Mulshoe-Simonton complex, 1 to 12 percent slopes
Location in survey area: About 14 miles north and 7 miles west of Shoshone; 2,000 feet south and 2,450 feet west of the northeast corner of sec. 22, T. 3 S., R. 16 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—10 to 15 inches
Average annual soil temperature—45 to 47 degrees F
Base saturation—50 to 75 percent in upper 30 inches

A and BA horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—0 to 15 percent
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—clay loam or sandy clay loam
Clay content—20 to 35 percent
Rock fragment content—0 to 15 percent gravel
Reaction—moderately acid or slightly acid

Ephrata Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately rapid to a depth of 26 inches and very rapid below
Landform: Stream terraces
Parent material: Alluvium
Slope range: 1 to 30 percent
Elevation: 2,700 to 3,100 feet
Average annual precipitation: 7 to 9 inches
Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Xerollic Camborthids

Typical Pedon

Ap—0 to 5 inches; yellowish brown (10YR 5/4) fine sandy loam, brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw1—5 to 14 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bw2—14 to 26 inches; light yellowish brown (10YR 6/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); abrupt smooth boundary.

2Bkq—26 to 61 inches; multicolored sand and gravel; single grain; loose, nonsticky and nonplastic; 40 percent gravel and 15 percent cobbles; slightly effervescent (about 5 percent calcium carbonate equivalent); thin (less than 1 millimeter thick) coatings of lime and silica; moderately alkaline (pH 8.2).

Typical Pedon Location

Map unit in which located: Ephrata fine sandy loam, 1 to 6 percent slopes
Location in survey area: About 2.5 miles north of Hagerman; 1,100 feet north and 1,200 feet west of the southeast corner of sec. 11, T. 7 S., R. 13 E.

Range in Characteristics

Profile:
Average annual soil temperature—52 to 54 degrees F

Ap horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist

Farmell Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains
Parent material: Silty alluvium
Slope range: 0 to 2 percent
Elevation: 4,000 to 4,600 feet

Average annual precipitation: 9 to 12 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Typical Pedon

A1—0 to 3 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine and fine vesicular pores; neutral (pH 7.2); abrupt smooth boundary.

A2—3 to 5 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; light gray (10YR 7/2) bleached very fine sand and silt grains on faces of peds; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

Bt1—5 to 8 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; light gray (10YR 7/2) bleached very fine sand and silt grains on faces of peds; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine tubular pores; many faint clay films on faces of peds; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—8 to 16 inches; light yellowish brown (10YR 6/4) clay, brown (10YR 5/3) moist; moderate medium and coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; common prominent clay films on faces of peds; mildly alkaline (pH 7.6); clear smooth boundary.

Bt3—16 to 36 inches; very pale brown (10YR 7/4) silty clay, light yellowish brown (10YR 6/4) moist; weak medium and coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine tubular pores; few faint clay films on faces of peds; moderately alkaline (pH 8.4); clear wavy boundary.

Bk1—36 to 56 inches; very pale brown (10YR 7/3) silty clay loam, light yellowish brown (10YR 6/4) moist; massive; very hard, firm, sticky and plastic; few very fine tubular pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); clear wavy boundary.

Bk2—56 to 80 inches; light yellowish brown (10YR 6/4) silty clay, yellowish brown (10YR 5/4) moist; massive; very hard, firm, sticky and plastic; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2).

Typical Pedon Location

Map unit in which located: Farmell-Power-Playas complex, 0 to 2 percent slopes
Location in survey area: About 14 miles east of Dietrich; about 2,000 feet east and 1,800 feet north of the southwest corner of sec. 8, T. 6 S., R. 21 E.

Range in Characteristics

Profile:
Depth to secondary lime—24 to 36 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 50 percent
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 50 percent
Calcium carbonate equivalent—10 to 15 percent
Reaction—mildly alkaline or moderately alkaline

Fathom Series

Depth class: Deep to a duripan and very deep
Drainage class: Somewhat excessively drained
Permeability: Rapid
Landform: Basalt plains, buttes, and escarpments of stream terraces
Parent material: Wind-modified alluvium
Slope range: 0 to 20 percent
Elevation: 2,700 to 3,500 feet
Average annual precipitation: 7 to 11 inches
Average annual air temperature: 50 to 52 degrees F
Frost-free period: 110 to 140 days

Taxonomic class: Sandy, mixed, mesic Xerollic Calciorthids

Typical Pedon

Ap1—0 to 5 inches; yellowish brown (10YR 5/4) fine sand, dark yellowish brown (10YR 3/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots and few medium roots; many very fine and fine and few medium interstitial pores; neutral (pH 7.3); clear wavy boundary.

Ap2—5 to 9 inches; brown (10YR 5/3) fine sand, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots and few medium roots; many very fine, fine, and medium interstitial pores; mildly alkaline (pH 7.5); abrupt wavy boundary.

Bw1—9 to 16 inches; yellowish brown (10YR 5/4) fine sand, brown (10YR 4/3) moist; weak thick platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 6.7); gradual wavy boundary.

Bw2—16 to 22 inches; light yellowish brown (10YR 6/4) fine sand, dark yellowish brown (10YR 4/4) moist; weak fine, medium, and coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; mildly alkaline (pH 7.5); gradual wavy boundary.

Bk1—22 to 28 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 5/3) moist; weak fine, medium, and coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores and few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—28 to 35 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores and few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.1); gradual wavy boundary.

Bk3—35 to 42 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores and few very fine and fine tubular pores; 2 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); clear irregular boundary.

2Bk—42 to 52 inches; white (10YR 8/2) sandy loam, very pale brown (10YR 7/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine and few medium interstitial pores; 2 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.1); abrupt wavy boundary.

2Bkqm—52 to 60 inches; very pale brown (10YR 8/3) indurated duripan; continuous laminar cap less than 1 millimeter thick at a depth of 52 inches; violently effervescent.

Typical Pedon Location

Map unit in which located: Jestrick-Fathom complex, 0 to 4 percent slopes

Location in survey area: About 5.5 miles south and 1.5 miles west of Wendell; about 450 feet east and 2,400 feet south of the northwest corner of sec. 32, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to secondary lime—19 to 34 inches
Average annual soil temperature—52 to 54 degrees F

The 2Bkqm horizon is absent in some pedons.

Ap horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry or moist

Bw horizon:
Chroma—3 or 4 dry or moist
Texture—fine sand or loamy fine sand

Bk horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—2 to 4 moist
Texture—fine sandy loam, sandy loam, or loamy fine sand

Bqkm horizon:
Thickness of laminar caps—0.5 millimeter to 3 millimeters
Distance between caps—0.5 inch to 2 inches

Fergie Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills and canyonsides

Parent material: Loess over colluvium and residuum derived from welded tuff, rhyolite, or basalt
Slope range: 2 to 70 percent
Elevation: 4,700 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 60 to 90 days

Taxonomic class: Loamy-skeletal, mixed frigid Ultic Argixerolls

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular and interstitial pores; 15 percent gravel; slightly acid (pH 5.9); clear smooth boundary.

BA—2 to 10 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; weak very fine and fine subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine tubular and interstitial pores; 15 percent gravel; slightly acid (pH 6.3); clear smooth boundary.

Bt1—10 to 22 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 30 percent gravel and 15 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

Bt2—22 to 52 inches; light yellowish brown (10YR 6/4) extremely gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; 50 percent gravel, 20 percent cobbles, and 10 percent stones; few faint clay films on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

R—52 inches; highly fractured basalt.

Typical Pedon Location

Map unit in which located: Fergie-Terracecreek-Gaibson complex, 2 to 25 percent slopes
Location in survey area: About 17 miles north of Bliss; 2,000 feet west and 1,500 feet south of the northeast corner of sec. 8, T. 3 S., R. 12 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Thickness of mollic epipedon—10 to 20 inches
Base saturation—less than 75 percent in upper 30 inches
Rock fragment content in particle-size control section—35 to 80 percent
Average annual soil temperature—45 to 47 degrees F
Reaction—moderately acid to neutral

A horizon:
Hue—7.5YR or 10YR
Value—2 or 3 moist
Chroma—2 or 3 moist or dry
Rock fragment content—15 to 30 percent gravel, 0 to 20 percent cobbles, and 0 to 5 percent stones

BA horizon:
Chroma—3 or 4 moist
Rock fragment content—15 to 30 percent gravel, 0 to 20 percent cobbles, and 0 to 5 percent stones
Clay content—20 to 25 percent

Bt horizon:
Hue—10YR or 7.5YR
Value—3 to 5 moist, 5 or 6 dry
Chroma—4 to 6 moist or dry
Rock fragment content—25 to 40 percent gravel, 0 to 45 percent cobbles, and 0 to 10 percent stones
Texture—very gravelly loam, extremely gravelly clay loam, very cobbly loam, extremely cobbly clay loam, or extremely gravelly sandy clay loam
Clay content—25 to 35 percent

Fluvaquents

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Landform: Stream and lacustrine terraces
Parent material: Alluvium
Slope range: 0 to 3 percent
Elevation: 2,800 to 4,400 feet
Average annual precipitation: 7 to 10 inches

Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Fluvaquents

Example Pedon

A1—0 to 1 inch; pale brown (10YR 6/3) fine sandy loam, reddish brown (2.5YR 4/4) moist; weak very fine granular structure; loose, very friable, nonsticky and nonplastic; 10 percent decimated roots; many very fine and fine interstitial pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; neutral (pH 7.3); clear smooth boundary.
A2—1 inch to 7 inches; light gray (10YR 7/2) fine sandy loam, dark brown (10YR 4/3) moist; common distinct mottles; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots and common medium roots; common very fine and fine interstitial pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; neutral (pH 7.2); gradual wavy boundary.
Cg1—7 to 14 inches; gray (10YR 6/1) fine sandy loam, greenish gray (5GY 6/1) moist; common distinct mottles; weak very fine granular structure; soft, loose, nonsticky and nonplastic; common very fine and fine roots and few medium roots; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); clear smooth boundary.
Cg2—14 to 50 inches; light gray (10YR 7/1) loamy fine sand, gray (5Y 5/1) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; violently effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); gradual wavy boundary.
Cg3—50 to 60 inches; light gray (10YR 7/2) loamy fine sand, gray (5Y 6/1) moist; single grain; loose, nonsticky and nonplastic; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8).

Example Pedon Location

Map unit in which located: Fluvaquents-Histic Endoaquolls complex, 0 to 3 percent slopes
Location in survey area: About 1.5 miles south and 0.5 mile east of Hagerman; 1,300 feet east and 1,300 feet north of the southwest corner of sec. 25, T. 7 S., R. 13 E.

Range in Characteristics

Profile:
Average annual soil temperature—52 to 54 degrees F

A horizon:
Value—6 or 7 dry, 4 moist
Chroma—2 or 3 dry, 3 or 4 moist
Clay content—10 to 15 percent
Calcium carbonate equivalent—0 to 10 percent
Reaction—neutral or mildly alkaline

Cg horizon:
Hue—10YR dry, 5GY or 5Y moist
Value—6 or 7 dry, 5 or 6 moist
Chroma—1 to 3 dry
Texture—loamy fine sand, fine sandy loam, or loam
Clay content—10 to 20 percent
Calcium carbonate equivalent—4 to 25 percent
Reaction—neutral to moderately alkaline

Gaibson Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills and canyonsides
Parent material: Colluvium and residuum derived from welded tuff and rhyolite
Slope range: 2 to 70 percent
Elevation: 4,700 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 60 to 90 days

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Haploxeralfs

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) extremely gravelly coarse sandy loam, dark yellowish brown (10YR 3/4) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; common very fine and fine and few medium irregular pores; 55 percent gravel and 10 percent channers; neutral (pH 6.8); abrupt smooth boundary.
AB—2 to 5 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; moderate very fine and fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium and coarse roots; common very fine and few fine interstitial pores; 35 percent gravel and 10 percent channers; neutral (pH 6.8); clear wavy boundary.
BA—5 to 13 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 3/6) moist; weak very fine and fine subangular blocky

structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; common very fine and few fine interstitial pores and few fine tubular pores; 40 percent gravel and 10 percent channers; neutral (pH 6.6); clear wavy boundary.

Bt—13 to 19 inches; dark yellowish brown (10YR 4/4) extremely gravelly clay loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and few fine and medium roots; common very fine and few fine and medium interstitial pores; few faint clay films on faces of peds between soil and rock fragments; 75 percent gravel and 15 percent channers; slightly acid (pH 6.4); abrupt wavy boundary.

R—19 inches; highly fractured rhyolite.

Typical Pedon Location

Map unit in which located: Fergie-Terracecreek-Gaibson complex, 2 to 25 percent slopes

Location in survey area: About 16 miles north of Bliss; about 1,500 feet west and 500 feet south of the northeast corner of sec. 10, T. 3 S., R. 12 E.

Range in Characteristics

Profile:
Depth to bedrock—14 to 20 inches
Rock fragment content in particle-size control section—35 to 90 percent
Average annual soil temperature—45 to 47 degrees F
Reaction—moderately acid to neutral

A Btq horizon is present in some pedons.

A horizon:
Hue—7.5YR or 10YR
Chroma—3 or 4 dry, 2 to 4 moist
Rock fragment content—25 to 50 percent gravel and 10 to 30 percent channers

AB and BA horizons:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Rock fragment content—25 to 40 percent gravel and 10 to 35 percent channers
Texture—very channery loam or very gravelly loam

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Clay content—21 to 35 percent
Rock fragment content—25 to 50 percent gravel and 10 to 40 percent channers
Texture—very gravelly loam, extremely gravelly clay loam, or very channery clay loam

Gooding Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plains and buttes
Parent material: Loess over weathered loess
Slope range: 0 to 20 percent
Elevation: 3,500 to 5,000 feet
Average annual precipitation: 9 to 13 inches
Average annual air temperature: 45 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Paleargids

Typical Pedon

Ap—0 to 8 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; mildly alkaline (pH 7.4); abrupt smooth boundary.

E—8 to 10 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

Btb1—10 to 17 inches; light brown (7.5YR 6/4) silty clay loam, dark brown (7.5YR 4/4) moist; strong fine and medium prismatic structure parting to strong fine angular blocky; very hard, very firm, sticky and very plastic; common very fine roots; common very fine tubular pores; many distinct clay films on faces of peds and lining pores; mildly alkaline (pH 7.6); abrupt wavy boundary.

Btb2—17 to 23 inches; light yellowish brown (10YR 6/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure; very hard, firm, sticky and very plastic; common very fine roots; common very fine tubular pores; many distinct clay films on faces of peds and lining pores; mildly alkaline (pH 7.8); clear wavy boundary.

Btb3—23 to 27 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine and fine tubular pores; many distinct clay films on faces of peds and lining pores; moderately alkaline (pH 8.2); abrupt wavy boundary.

Btkb—27 to 45 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; common very fine tubular pores; few faint clay films on faces of peds and lining pores; slightly effervescent (about 5 percent calcium carbonate equivalent); filaments of lime on faces of peds; moderately alkaline (pH 8.4); clear wavy boundary.

Bkqb—45 to 54 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, nonsticky and nonplastic; few very fine roots; few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.8); abrupt wavy boundary.

Bkqmb—54 to 59 inches; very pale brown (10YR 8/3) weakly cemented duripan, brown (10YR 4/3) moist; continuous lime and silica cap less than 1 millimeter thick at a depth of 54 inches; violently effervescent; strongly alkaline (pH 8.6); abrupt wavy boundary.

2R—59 inches; basalt.

Typical Pedon Location

Map unit in which located: Gooding silt loam, 0 to 3 percent slopes (fig. 17)

Location in survey area: About 5.5 miles north and 4 miles east of Gooding; about 750 feet east and 2,640 feet south of the northwest corner of sec. 1, T. 5 S., R. 15 E.

Range in Characteristics

Profile:

Depth to bedrock—41 inches or more

Depth to duripan—40 to 60 inches

Depth to secondary lime—18 to 33 inches

Clay content in particle-size control section—35 to 50 percent

Average annual soil temperature—47 to 53 degrees F

Ap horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—2 or 3 dry or moist

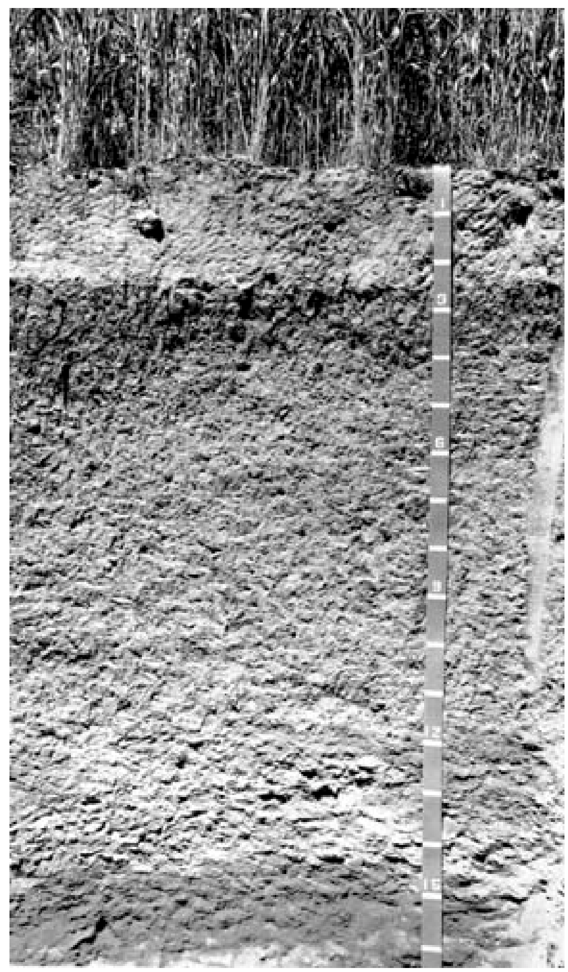


Figure 17.—Profile of Gooding silt loam, 0 to 3 percent slopes.

E horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist
Reaction—neutral or mildly alkaline

Btb and Btkb horizons:
Hue—10YR or 7.5YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—clay, silty clay, or silty clay loam
Clay content—35 to 59 percent
Reaction—neutral to moderately alkaline

Bkqb horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or silty clay loam
Clay content—25 to 40 percent
Reaction—moderately alkaline or strongly alkaline

Hamrub Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains
Parent material: Silty alluvium and loess
Slope range: 1 to 4 percent
Elevation: 4,200 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine-silty, mixed, mesic Aridic Calcic Argixerolls

Typical Pedon

A1—0 to 4 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; neutral (pH 7.3); clear wavy boundary.

A2—4 to 10 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular and interstitial pores; neutral (pH 7.3); clear wavy boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine tubular and interstitial pores; few faint clay films on faces of peds; neutral (pH 7.2); clear wavy boundary.

Bt2—15 to 19 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, friable, sticky and plastic; few very fine and fine roots; common very fine and few fine tubular and interstitial pores; few faint clay films on faces of peds; neutral (pH 7.3); clear wavy boundary.

Bt3—19 to 28 inches; dark brown (10YR 5/3) silty clay loam, brown (10YR 4/3) moist; moderate fine and medium prismatic structure; extremely hard, firm, sticky and plastic; few very fine roots; few very fine tubular and interstitial pores; common distinct clay films on faces of peds and lining pores; mildly alkaline (pH 7.4); clear wavy boundary.

Btk—28 to 37 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; extremely hard, firm, sticky and plastic; few very fine roots; few very fine tubular and interstitial pores; patchy faint clay films on faces of peds; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.5); abrupt smooth boundary.

Bkq—37 to 50 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; massive; extremely hard, friable, slightly sticky and slightly plastic; 5 percent weakly cemented nodules; violently effervescently (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.5); abrupt smooth boundary.

2Bkqm—50 to 52 inches; very pale brown (10YR 7/3) indurated duripan; massive; violently effervescent (about 30 percent calcium carbonate equivalent); abrupt smooth boundary.

3R—52 inches; fractured basalt with Bkq horizon material in fractures.

Typical Pedon Location

Map unit in which located: Bailing-Hamrub-Darrah complex, 1 to 4 percent slopes

Location in survey area: About 11 miles north and 1 mile west of Shoshone, 1,450 feet north and 2,300 feet east of the southwest corner of sec. 10, T. 3 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—45 to 60 inches
Depth to duripan—40 to 50 inches
Thickness of mollic epipedon—10 to 15 inches

Depth to secondary calcium carbonate—24 to 31 inches
Average annual soil temperature—47 to 50 degrees F

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 32 percent
Reaction—neutral or mildly alkaline

Btk horizon:
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—20 to 32 percent
Calcium carbonate equivalent—15 to 30 percent
Reaction—mildly alkaline or moderately alkaline

Bkq horizon:
Value—6 or 7 dry, 5 or 6 moist
Texture—silt loam or loam
Calcium carbonate equivalent—15 to 30 percent
Rock fragment content—0 to 10 percent gravel-sized duripan fragments
Reaction—mildly alkaline or moderately alkaline

Bkqm horizon:
Value—7 or 8 dry, 6 or 7 moist
Thickness of duripan—2 to 8 inches
Thickness of silica caps—2 to 10 millimeters

Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate over very rapid
Landform: Stream terraces
Parent material: Alluvium
Slope range: 1 to 3 percent
Elevation: 3,500 to 4,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Mixed, mesic Torrifluventic Haploxerolls

Example Pedon

A1—0 to 3 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; soft, very friable, slightly sticky and slightly plastic; neutral (pH 7.2); abrupt smooth boundary.
A2—3 to 16 inches; dark yellowish brown (10YR 4/4) loam, dark brown (10YR 3/3) moist; soft, friable, slightly sticky and slightly plastic; mildly alkaline (pH 7.8); clear wavy boundary.
2C—16 to 60 inches; multicolored sand and gravel; massive; soft, loose, nonsticky and nonplastic; stratified sediment that is 30 to 60 percent gravel; moderately alkaline (pH 7.9).

Example Pedon Location

Map unit in which located: Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes
Location in survey area: Along Dry Creek; about 100 feet east and 400 feet south of the northwest corner of the SE$^1/_4$ of sec. 2, T. 5 S., R. 14 E.

Range in Characteristics

Profile:
Depth to stratified sand and gravel—14 to 20 inches
Thickness of mollic epipedon—10 to 20 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—very fine sandy loam, fine sandy loam, or loam
Reaction—neutral or mildly alkaline

2C horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—fine sand, loamy sand, gravelly loamy sand, or gravelly fine sand
Clay content—5 to 10 percent
Rock fragment content—0 to 30 percent
Reaction—neutral to moderately alkaline

Harsan Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt buttes and plains
Parent material: Eolian deposits reworked by water
Slope range: 0 to 6 percent
Elevation: 3,200 to 4,100 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical Pedon

A—0 to 2 inches; brown (10YR 4/3) loamy fine sand, dark brown (10YR 3/3) moist; single grain; loose, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

AB—2 to 16 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 7.0); gradual wavy boundary.

BA—16 to 26 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine interstitial pores; neutral (pH 7.2); clear wavy boundary.

Bt—26 to 38 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds; mildly alkaline (pH 7.4); abrupt wavy boundary.

Btk—38 to 47 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; moderate medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 5 percent gravel; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); clear wavy boundary.

Bk—47 to 50 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; massive; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; 5 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bkqm—50 to 60 inches; white (10YR 8/2) indurated duripan, light yellowish brown (10YR 6/4) moist; massive; silica cap 1 millimeter thick; 5 percent gravel; violently effervescent.

Typical Pedon Location

Map unit in which located: Harsan-Wendell complex, 2 to 12 percent slopes

Location in survey area: About 1.75 miles north and 3.25 miles east of Wendell; about 2,100 feet west and 1,600 feet south of the northeast corner of sec. 24, T. 7 S., R. 15 E.

Range in Characteristics

Profile:
Depth to duripan—40 to 60 inches
Depth to secondary lime—25 to 43 inches
Average annual soil temperature—50 to 53 degrees F

A and AB horizons:
Value—5 or 6 dry, 3 to 5 moist

BA horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam or sandy loam

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, clay loam, or loam
Clay content—24 to 34 percent

Btk horizon:
Value—5 or 6 dry, 4 or 5 moist
Texture—clay loam or sandy clay loam
Rock fragment content—0 to 5 percent gravel

Bk horizon:
Value—5 or 6 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—loam or clay loam
Clay content—25 to 32 percent
Rock fragment content—0 to 5 percent gravel

Bkqm horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4 dry
Rock fragment content—0 to 5 percent gravel

Histic Endoaquolls

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Moderate
Landform: Stream and lacustrine terraces
Parent material: Alluvium
Slope range: 0 to 3 percent
Elevation: 2,800 to 4,400 feet
Average annual precipitation: 7 to 9 inches

Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Histic Endoaquolls

Example Pedon

Oe—0 to 11 inches; very dark grayish brown (10YR 3/2) mucky peat, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; 60 percent fibric roots and 40 percent decimated roots; many very fine tubular pores; neutral (pH 7.3); clear smooth boundary.

A—11 to 21 inches; very dark gray (10YR 3/1) fine sandy loam, black (10YR 2/1) moist; common distinct dark brown (7.5YR 3/4) mottles; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots and common medium roots; common very fine and fine tubular pores; neutral (pH 7.3); abrupt wavy boundary.

Cg1—21 to 30 inches; light gray (10YR 7/1) fine sandy loam, greenish gray (5G 5/1) moist; common distinct dark brown (7.5YR 3/4) mottles; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.4); clear wavy boundary.

Cg2—30 to 50 inches; light gray (10YR 7/1) fine sandy loam, greenish gray (5GY 5/1) moist; single grain; loose, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine tubular pores; strongly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); gradual wavy boundary.

C—50 to 60 inches; light gray (10YR 7/2) loamy fine sand, light yellowish brown (10YR 6/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine tubular pores; mildly alkaline (pH 7.4).

Example Pedon Location

Map unit in which located: Fluvaquents-Histic Endoaquolls complex, 0 to 3 percent slopes

Location in survey area: About 1.5 miles south and 0.5 mile east of Hagerman; 1,200 feet east and 1,300 feet north of the southwest corner of sec. 25, T. 7 S., R. 13 E.

Range in Characteristics

Profile:
Average annual soil temperature—52 to 54 degrees F
Flooding frequency—frequent
Depth to water table—0 to 18 inches

Cg and C horizons:
Hue—10YR, 5GY, or 5G moist
Texture—loamy fine sand, fine sandy loam, or loam
Reaction—neutral to moderately alkaline
Clay content—10 to 20 percent

Hobby Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plateaus, mesas, canyonsides, and basalt plains
Parent material: Weathered loess
Slope range: 2 to 70 percent
Elevation: 3,900 to 5,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Typic Haploxererts

Typical Pedon

A—0 to 4 inches; very dark grayish brown (10YR 3/2) extremely stony silty clay, very dark brown (10YR 2/2) moist; weak thin and medium platy structure parting to fine and very fine granular; slightly hard, very friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; many fine and very fine interstitial pores and few very fine and fine tubular pores; common cracks 1 centimeter wide; 5 percent gravel, 60 percent cobbles, and 15 percent stones; slightly acid (pH 6.3); clear smooth boundary.

Bss1—4 to 12 inches; dark brown (7.5YR 3/2) silty clay, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and very fine roots; few very fine and fine interstitial pores; few intersecting slickensides and pressure faces; common cracks 1 centimeter wide; 5 percent gravel; slightly acid (pH 6.5); gradual wavy boundary.

Bss2—12 to 17 inches; dark brown (7.5YR 4/2) silty clay, dark brown (7.5YR 3/2) moist; moderate medium and coarse prismatic structure; extremely hard, firm, sticky and plastic; few very fine roots; few fine interstitial pores; few intersecting slickensides and pressure faces; common cracks

1 centimeter wide; 5 percent gravel; neutral (pH 6.6); gradual wavy boundary.

Bss3—17 to 21 inches; dark brown (7.5YR 4/2) very cobbly clay, dark brown (7.5YR 3/4) moist; strong fine and medium subangular blocky structure parting to moderate fine and medium subangular blocky; extremely hard, firm, sticky and plastic; few very fine, fine, medium, and coarse roots in cracks; few very fine and fine tubular pores; common intersecting slickensides and pressure faces; 20 percent gravel and 30 percent cobbles; slightly acid (pH 6.2); abrupt wavy boundary.

2Cr—21 to 27 inches; highly weathered basaltic bedrock with weathered, discontinuous silica coatings filling some fractures and cementing some of the more stable bedrock; clear smooth boundary.

2R—27 inches; basalt.

Typical Pedon Location

Map unit in which located: Tschamman-Hobby-Bray complex, 2 to 8 percent slopes

Location in survey area: About 13 miles north of Bliss; about 1,350 feet south and 250 feet east of the northwest corner of sec. 26, T. 3 S., R. 12 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Organic matter content—0.5 to 1.0 percent
Average clay content in particle-size control section—40 to 55 percent
Average annual soil temperature—47 to 49 degrees F
Reaction—slightly acid or neutral
Presence of cracks—open July through October and closed in winter; 1 centimeter to 3 centimeters wide at a depth of 20 to 25 inches and extending upwards to the surface
Amount of intersecting slickensides—few to common in Bss horizon

A Bq horizon is present in some pedons.

The 2Cr horizon is absent in some pedons.

A horizon:
Value—3 to 5 dry; 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—5 to 20 percent gravel, 5 to 70 percent cobbles, and 5 to 20 percent stones

Bss1 and Bss2 horizons:
Hue—10YR or 7.5YR
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist
Texture—silty clay or clay
Clay content—40 to 60 percent
Reaction—slightly acid or neutral
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles

Bss3 horizons:
Hue—5YR or 7.5YR
Value—3 to 5 dry or moist
Chroma—2 to 4 dry or moist
Texture—very cobbly clay, clay, or cobbly silty clay
Clay content—40 to 60 percent
Reaction—slightly acid to neutral
Rock fragment content—5 to 25 percent gravel, 5 to 30 percent cobbles, and 0 to 10 percent stones

Hoosegow Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Alluvium
Slope range: 0 to 6 percent
Elevation: 3,300 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical Pedon

A1—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; neutral (pH 6.8); clear wavy boundary.

A2—2 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium and thick platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; neutral (pH 7.0); clear wavy boundary.

BA—7 to 12 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; neutral (pH 7.0); gradual wavy boundary.

Bt1—12 to 20 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; neutral (pH 7.2); gradual wavy boundary.

Bt2—20 to 37 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds; neutral (pH 7.2); clear wavy boundary.

BC—37 to 56 inches; yellowish brown (10YR 5/6) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; 5 percent gravel; neutral (pH 7.2); gradual wavy boundary.

C—56 to 68 inches; light yellowish brown (10YR 6/4) loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Hoosegow-McPan-Rock outcrop complex, 2 to 10 percent slopes

Location in survey area: About 3 miles west and 1 mile south of Shoshone; 1,000 feet south and 650 feet east of the northwest corner of sec. 8, T. 6 S., R. 17 E.

Range in Characteristics

Profile:
Average annual soil temperature—49 to 53 degrees F

A Bk horizon is below a depth of 50 inches in some pedons.

A horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist

BA horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or fine sandy loam
Clay content—14 to 18 percent
Rock fragment content—0 to 5 percent

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam or sandy clay loam
Clay content—20 to 27 percent
Rock fragment content—0 to 5 percent
Reaction—neutral or mildly alkaline

BC horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—fine sandy loam or loam
Clay content—10 to 15 percent
Rock fragment content—0 to 5 percent
Reaction—neutral or mildly alkaline

C horizon:
Value—6 or 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, loamy fine sand, or loamy sand
Clay content—5 to 10 percent
Rock fragment content—0 to 5 percent
Reaction—neutral or mildly alkaline

Idow Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt buttes and plains
Parent material: Alluvium derived from eolian material
Slope range: 0 to 8 percent
Elevation: 3,400 to 4,500 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Typical Pedon

Ap1—0 to 6 inches; dark yellowish brown (10YR 4/4) loamy fine sand, dark yellowish brown (10YR 4/3) moist; weak thin, medium, and thick platy structure; hard, very friable, nonsticky and nonplastic; many very fine and few fine roots; common very fine interstitial pores and few very fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Ap2—6 to 9 inches; brown (10YR 4/3) fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine tubular pores and few very fine, fine, and medium interstitial pores; neutral (pH 7.0); clear wavy boundary.

Bt—9 to 17 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine and medium tubular pores; few faint clay films on faces of peds and lining pores; neutral (pH 7.1); abrupt wavy boundary.

Bkq1—17 to 21 inches; very pale brown (10YR 7/3) sandy clay loam, yellowish brown (10YR 5/4) moist; weak very fine, fine, and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine interstitial pores; strongly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; 15 percent fine, gravel-sized, weakly cemented nodules; moderately alkaline (pH 8.1); clear wavy boundary.

Bkq2—21 to 31 inches; very pale brown (10YR 8/3) fine sandy loam, very pale brown (10YR 7/4) moist; weak fine and medium subangular blocky structure; discontinuous cap at a depth of 26 inches; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores and few very fine interstitial pores; strongly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; 30 percent fine, gravel-sized, weakly cemented nodules; moderately alkaline (pH 8.1); abrupt wavy boundary.

Bkqm—31 to 49 inches; very pale brown (10YR 7/3) indurated duripan, yellowish brown (10YR 5/4) moist; violently effervescent; abrupt wavy boundary.

2R—49 inches; lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Idow-Wendell-Bruncan complex, 3 to 8 percent slopes

Location in survey area: About 3 miles south and 2.5 miles west of Gooding; about 1,900 feet east and 300 feet south of the northwest corner of sec. 26, T. 6 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—40 inches or more
Depth to duripan—20 to 40 inches
Depth to secondary lime—17 to 33 inches
Clay content in particle-size control section—18 to 27 percent
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral to moderately alkaline

Ap horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bt horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay loam, fine sandy loam, or loam

Bkq horizon:
Value—6 to 8 dry, 5 to 7 moist
Texture—loam, sandy clay loam, fine sandy loam, or silt loam
Rock fragment content—0 to 5 percent
Lime- and silica-cemented nodule content—0 to 10 percent

Bkqm horizon:
Value—7 or 8 dry
Chroma—2 or 3 dry, 3 or 4 moist

Jansite Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderately slow
Landform: Stream terraces
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 3,000 to 3,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Typic Natrixerolls

Typical Pedon

An1—0 to 2 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to weak thin and medium platy; hard, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine interstitial pores and few very fine and fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 16 millimhos per centimeter; very strongly alkaline (pH 10.5); abrupt smooth boundary.

An2—2 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak medium platy structure parting to weak fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few very fine roots; few fine interstitial pores and few very fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 38 millimhos per centimeter; very strongly alkaline (pH 9.9); abrupt smooth boundary.

Btn1—10 to 23 inches; brown (10YR 5/3) silt loam, black (10YR 2/1) moist; strong fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few faint clay films on faces of peds and lining pores; few very fine roots; common very fine and few fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 13 millimhos per centimeter; very strongly alkaline (pH 10.6); clear smooth boundary.

Btn2—23 to 41 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; strong fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few faint clay films on faces of peds and lining pores; few very fine roots; common very fine and few fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 0.87 millimho per centimeter; very strongly alkaline (pH 11.0); clear smooth boundary.

Bn1—41 to 45 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine and few fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); lenses of stratified sand and silt; electrical conductivity of 6 millimhos per centimeter; very strongly alkaline (pH 9.3); gradual smooth boundary.

Bn2—45 to 57 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 3/3) moist; lenses of stratified sand and silt; moderate medium and coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; many very fine and few fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 6 millimhos per centimeter; very strongly alkaline (pH 9.0); clear smooth boundary.

Bn3—57 to 60 inches; light brownish gray (10YR 6/2) fine sand, very dark grayish brown (10YR 3/2) moist; lenses of stratified sand and silt; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine tubular pores and common very fine interstitial pores; slightly effervescent (about 5 percent calcium carbonate equivalent); electrical conductivity of 6 millimhos per centimeter; very strongly alkaline (pH 9.2).

Typical Pedon Location

Map unit in which located: Springcove-Jansite complex, 0 to 2 percent slopes
Location in survey area: About 8 miles north and 3 miles west of Bliss, along Clover Creek; 700 feet west and 200 feet south of the northeast corner of the NE1/4SW1/4 of sec. 34, T. 4 S., R. 12 E.

Range in Characteristics

Profile:
Average annual soil temperature—50 to 53 degrees F
Reaction—strongly alkaline or very strongly alkaline

An horizon:
Value—2 or 3 moist
Chroma—2 or 3 dry or moist
Electrical conductivity—16 to 40 millimhos per centimeter
Sodium adsorption ratio—200 to 300
Calcium carbonate equivalent—0 to 5 percent

Btn horizon:
Value—2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Texture—loam, silt loam, or clay loam
Clay content—25 to 31 percent
Electrical conductivity—8 to 16 millimhos per centimeter
Sodium adsorption ratio—150 to 200
Calcium carbonate equivalent—0 to 5 percent

Bn horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Texture—stratified silt loam to fine sand
Rock fragment content—0 to 5 percent
Sodium adsorption ratio—100 to 200
Calcium carbonate equivalent—0 to 5 percent

Jestrick Series

Depth class: Moderately deep to a duripan
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 0 to 12 percent
Elevation: 3,200 to 3,500 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Durorthids

Typical Pedon

A1—0 to 1 inch; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak very fine and fine granular structure; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 2 percent gravel; neutral (pH 7.0); clear wavy boundary.

A2—1 inch to 5 inches; yellowish brown (10YR 5/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; weak medium and thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; 2 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw—5 to 16 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine and fine tubular pores; 3 percent gravel; neutral (pH 7.2); gradual wavy boundary.

Bkq—16 to 22 inches; very pale brown (10YR 7/3) cobbly fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, firm, slightly sticky and nonplastic; few very fine and fine roots; common very fine and fine tubular pores; about 5 percent gravel and 10 percent cobbles; 25 percent cemented nodules; strongly effervescent (about 15 percent calcium carbonate equivalent); coatings of lime and silica as much as 1 millimeter thick on underside of rock fragments; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bkqm—22 to 29 inches; white (10YR 8/2) indurated duripan, gray (10YR 6/2) moist; series of continuous laminar caps less than 1 millimeter thick and 0.5 inch to 2.0 inches apart; strongly cemented material between caps; few very fine and fine roots matted on top of laminar caps; 10 percent gravel and 10 percent cobbles cemented in duripan; violently effervescent; abrupt wavy boundary.

3R—29 inches; basalt with continuous lime- and silica-cemented laminar cap 1 millimeter to 2 millimeters thick.

Typical Pedon Location

Map unit in which located: Jestrick loamy fine sand, 1 to 4 percent slopes (fig. 18)

Location in survey area: About 3 miles south and 1/2 mile east of Wendell; about 450 feet south and 370 feet west of the northeast corner of sec. 21, T. 8 S., R. 15 E.

Range in Characteristics

Profile:

Depth to bedrock—25 to 40 inches
Depth to duripan—21 to 32 inches
Depth to secondary lime—15 to 22 inches

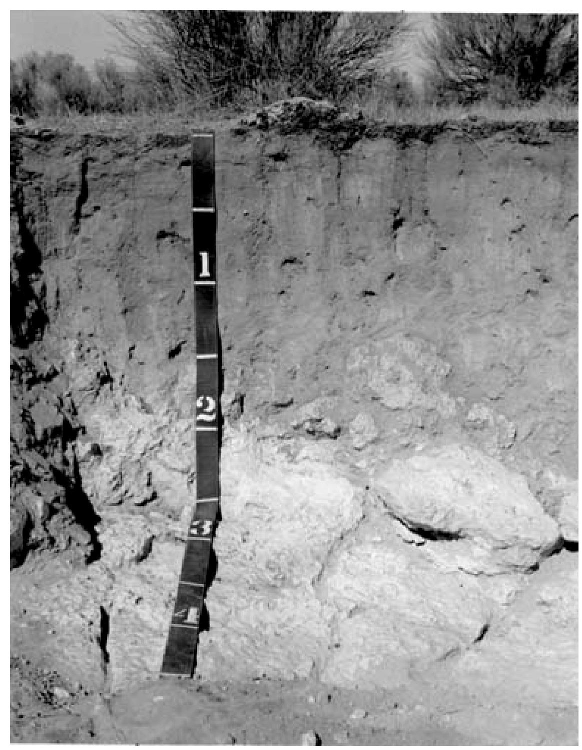


Figure 18.—Profile of Jestrick loamy fine sand, 1 to 4 percent slopes.

Average annual soil temperature—50 to 53 degrees F
A Bk horizon is in some pedons.

A horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist

Rock fragment content—0 to 5 percent gravel and 0 to 10 percent cobbles

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, sandy loam, or loam
Clay content—8 to 18 percent
Rock fragment content—0 to 5 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—5 to 7 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—cobbly fine sandy loam, cobbly very fine sandy loam, or cobbly loam
Clay content—8 to 17 percent
Rock fragment content—5 to 10 percent gravel and 10 to 20 percent cobbles
Reaction—moderately alkaline or strongly alkaline
Calcium carbonate equivalent—10 to 20 percent

2Bkqm horizon:
Thickness of laminar caps—1 millimeter to 2 millimeters
Cementation of material between caps—strong or indurated
Rock fragment content—5 to 15 percent gravel, 0 to 20 percent cobbles, and 0 to 5 percent stones

Kecko Series

Depth class: Very deep, or deep to a duripan
Drainage class: Well drained
Permeability: Moderately rapid
Landform: Basalt plains and stream terraces
Parent material: Eolian deposits reworked by water
Slope range: 0 to 8 percent
Elevation: 2,800 to 4,600 feet
Average annual precipitation: 8 to 11 inches
Average annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 140 days

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Camborthids

Typical Pedon

A—0 to 5 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 6.8); clear wavy boundary.

Bw1—5 to 14 inches; brown (10YR 5/3) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine interstitial and tubular pores; neutral (pH 7.0); gradual wavy boundary.

Bw2—14 to 30 inches; pale brown (10YR 6/3) fine sandy loam, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine interstitial pores; 5 percent gravel; mildly alkaline (pH 7.4); clear wavy boundary.

Bk1—30 to 40 inches; light gray (10YR 7/2) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine interstitial pores; 5 percent gravel; strongly effervescent (15 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bk2—40 to 61 inches; very pale brown (10YR 7/3) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; 5 percent gravel; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2).

Typical Pedon Location

Map unit in which located: Vining-Kecko-Rock outcrop complex, 2 to 12 percent slopes
Location in survey area: About 3 miles south and 5 miles east of Minidoka; about 2,600 feet south and 1,000 feet east of the northwest corner of sec. 28, T. 8 S., R. 27 E.

Range in Characteristics

Profile:
Depth to secondary lime—20 to 40 inches
Average annual soil temperature—50 to 54 degrees F

A Bkqm horizon is at a depth of 46 to 60 inches in some pedons.

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, loam, or very fine sandy loam

Bk horizon:
Value—6 or 7 dry

Chroma—2 or 3 dry or moist
Texture—fine sandy loam, loamy fine sand, loamy very fine sand, very fine sandy loam, or silt loam
Calcium carbonate equivalent—15 to 25 percent

Kinzie Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and buttes
Parent material: Loess over weathered loess
Slope: 1 to 15 percent
Elevation: 4,200 to 4,700 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine-silty, mixed, mesic Aridic Durixerolls

Typical Pedon

A1—0 to 2 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 2 percent rock fragments; neutral (pH 7.0); clear smooth boundary.

A2—2 to 6 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 2 percent rock fragments; neutral (pH 7.2); clear smooth boundary.

Bt1—6 to 10 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; common faint clay films on faces of peds and lining pores; trace of rock fragments; neutral (pH 7.2); gradual wavy boundary.

Bt2—10 to 17 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; common faint clay films on faces of peds and lining pores; 2 percent rock fragments; mildly alkaline (pH 7.4); abrupt smooth boundary.

Btkb1—17 to 20 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; very hard, very firm, sticky and plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; many distinct clay films on faces of peds; 2 percent gravel and 5 percent cobbles at a depth of 20 inches; slightly effervescent with strongly effervescent veins (about 15 percent calcium carbonate equivalent); mildly alkaline (pH 7.4); clear wavy boundary.

Btkb2—20 to 23 inches; light yellowish brown (10YR 6/4) silty clay loam, light brown (7.5YR 6/4) moist; moderate medium and coarse prismatic structure; very hard, very firm, sticky and plastic; common very fine and fine roots and few medium and coarse roots; few very fine and fine tubular pores; common prominent clay films on faces of peds; 2 percent rock fragments; strongly effervescent (20 percent calcium carbonate); masses of lime on faces of prisms; mildly alkaline (pH 7.6); clear wavy boundary.

Bkb—23 to 27 inches; very pale brown (10YR 7/3) silty clay loam, brown (7.5YR 5/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 2 percent rock fragments; strongly effervescent (25 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bkqb—27 to 38 inches; pinkish white (7.5YR 8/2) silty clay loam, pink (7.5YR 7/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel and 5 percent cobbles; strongly effervescent (25 percent calcium carbonate equivalent); 10 percent cemented nodules; disseminated lime and coatings of lime and silica on rock fragments; moderately alkaline (pH 8.2); abrupt irregular boundary.

Bkqmb—38 to 47 inches; pinkish white (7.5YR 8/2) indurated duripan, pink (7.5YR 7/4) moist; light brown (7.5YR 6/4) organic coatings; continuous laminar caps 1 millimeter to 2 millimeters thick; strongly cemented material between caps; roots matted on silica caps; 10 percent gravel and

40 percent cobbles; strongly effervescent; abrupt broken boundary.
2R—47 inches; lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Marley-Kinzie complex, 4 to 8 percent slopes
Location in survey area: About 5 miles north and 2 miles west of Richfield; 100 feet north and 400 feet east of the southwest corner of sec. 28, T. 3 S., R. 19 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to duripan—21 to 39 inches
Depth to secondary lime—10 to 30 inches
Thickness of mollic epipedon—9 to 17 inches
Organic matter content in upper 16 inches—1 to 4 percent
Clay content in particle-size control section—23 to 35 percent
Average annual soil temperature—47 to 50 degrees F
Reaction—neutral to strongly alkaline

A horizon:
Chroma—2 or 3 moist, 3 or 4 dry

Bt horizon:
Value—3 or 4 moist
Chroma—3 to 6 dry or moist
Clay content—23 to 32 percent
Texture—silt loam or silty clay loam

Btkb horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 45 percent
Texture—silty clay, clay, or silty clay loam
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles

Bkb and Bkqb horizons:
Hue—10YR or 7.5YR
Value—7 or 8 dry, 6 or 7 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or silty clay loam
Clay content—25 to 35 percent
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles

Kudlac Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Very slow
Landform: Dissected lacustrine terraces
Parent material: Lacustrine sediment
Slope range: 8 to 35 percent
Elevation: 2,700 to 3,200 feet
Average annual precipitation: 8 to 9 inches
Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Fine-silty, mixed (calcareous), mesic Xeric Torriorthents

Typical Pedon

Ap—0 to 3 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; moderate thin and medium platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; common very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); clear smooth boundary.
C1—3 to 12 inches; pale brown (10YR 6/3) silt loam, yellowish brown (10YR 5/4) moist; moderate thick platy structure; hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.5); clear smooth boundary.
2C2—12 to 18 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; weak medium platy structure parting to moderate fine subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.5); abrupt smooth boundary.
2C3—18 to 23 inches; very pale brown (10YR 7/3) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium platy structure; very hard, very firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots on vertical faces; few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.5); clear wavy boundary.
2C4—23 to 29 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots on vertical faces; many

very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.6); abrupt smooth boundary.

2C5—29 to 60 inches; very pale brown (10YR 7/3) silty clay loam, pale brown (10YR 6/3) moist; strong medium platy structure; extremely hard, extremely firm, slightly sticky and plastic; few very fine and fine roots on vertical faces; few very fine and fine tubular pores running horizontally between plates; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.3).

Typical Pedon Location

Map unit in which located: Fathom-Kudlac-Anchustequi complex, 8 to 35 percent slopes

Location in survey area: About 1/2 mile southeast of Hagerman; about 100 feet east and 2,300 feet south of the northwest corner of sec. 24, T. 7 S., R. 13 E.

Range in Characteristics

Profile:
Average annual soil temperature—52 to 54 degrees F

Ap horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist

C horizon:
Texture—silty clay loam or silt loam

Linkletter Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Rounded hills and terraces
Parent material: Loess over old stratified alluvium
Slope range: 8 to 25 percent
Elevation: 3,400 to 3,900 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Xerollic Haplargids

Typical Pedon

A—0 to 3 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 3/3) moist; weak thin and medium platy structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine vesicular and tubular pores; 15 percent rounded gravel; neutral (pH 6.7); abrupt smooth boundary.

Bw1—3 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and very fine subangular blocky structure parting to moderate very fine granular; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and coarse tubular pores; 10 percent rounded gravel; neutral (pH 6.8); gradual wavy boundary.

Bw2—7 to 16 inches; brown (10YR 5/3) loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores and few fine and medium interstitial pores; 10 percent rounded gravel; neutral (pH 7.0); abrupt wavy boundary.

2Bt—16 to 31 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine tubular pores; many faint clay films on faces of peds; 5 percent rounded gravel; neutral (pH 7.0); abrupt wavy boundary.

2Btk—31 to 40 inches; brown (7.5YR 5/4) cobbly sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; common faint clay films on faces of peds; 10 percent rounded gravel and 20 percent rounded cobbles; few fine slightly effervescent veins and masses of lime (about 5 percent calcium carbonate equivalent); neutral (pH 7.1); abrupt smooth boundary.

2Bk—40 to 55 inches; reddish yellow (7.5YR 6/6) gravelly sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 15 percent rounded gravel; common fine violently effervescent veins and masses of lime (about 10 percent calcium carbonate equivalent); moderately alkaline (pH 7.7); abrupt wavy boundary.

2Bkqm—55 to 67 inches; reddish yellow (7.5YR 7/6) indurated duripan; massive; continuous laminar caps 0.5 millimeter to 2 millimeters thick; thickest caps on layers that have the highest percentage of gravel; 30 percent rounded gravel; violently effervescent.

Typical Pedon Location

Map unit in which located: Chilcott-Linkletter complex, 2 to 25 percent slopes
Location in survey area: About 7 miles north and 4 miles east of Bliss; about 1,800 feet north and 600 feet west of the southeast corner of sec. 5, T. 5 N., R. 13 E.

Range in Characteristics

Profile:
Depth to duripan—40 to 60 inches
Depth to secondary calcium carbonate—30 to 40 inches
Clay content in particle-size control section—35 to 45 percent
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—4 to 6 dry, 2 to 4 moist
Chroma—3 or 4 dry or moist
Rock fragment content—15 to 30 percent gravel and 0 to 5 percent cobbles

Bw horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, sandy clay loam, or gravelly loam
Clay content—17 to 30 percent
Rock fragment content—0 to 20 percent gravel and 0 to 5 percent cobbles

2Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—4 or 5 dry or moist
Texture—clay loam, sandy clay, or sandy clay loam
Clay content—30 to 45 percent
Calcium carbonate equivalent—0 to 10 percent
Rock fragment content—0 to 10 percent gravel and 0 to 5 percent cobbles

2Btk horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 4 or 5 moist
Chroma—4 or 5 dry or moist
Texture—clay loam, sandy clay loam, or cobbly sandy clay loam
Clay content—25 to 40 percent
Calcium carbonate equivalent—0 to 5 percent
Reaction—neutral or mildly alkaline
Rock fragment content—0 to 15 percent gravel and 0 to 25 percent cobbles

2Bk horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—4 to 6 dry or moist
Texture—loam, sandy loam, gravelly sandy loam, or cobbly sandy loam
Clay content—15 to 25 percent
Calcium carbonate equivalent—5 to 10 percent
Reaction—mildly alkaline or moderately alkaline
Rock fragment content—0 to 20 percent gravel and 0 to 20 percent cobbles

Lithic Torriorthents

Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Loess over basalt
Slope range: 2 to 8 percent
Elevation: 3,500 to 4,400 feet
Average annual precipitation: 9 to 13 inches
Average annual air temperature: 45 to 51 degrees F
Frost-free period: 90 to 120 days

Taxonomic class: Lithic Torriorthents

Example Pedon

A—0 to 2 inches; brown (10YR 5/3) very cobbly silt loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine tubular pores; 15 percent gravel and 35 percent cobbles; neutral (pH 7.0); clear wavy boundary.
Bw—2 to 9 inches; yellowish brown (10YR 5/4) cobbly silt loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine tubular pores; 10 percent gravel and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.
2R—9 inches; fractured basalt.

Example Pedon Location

Map unit in which located: Lava flows-Lithic Torriorthents complex, 2 to 8 percent slopes
Location in survey area: About 1 mile north of Shoshone; about 1,600 feet south and 350 feet west of the northeast corner of sec. 2, T. 5 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—6 to 10 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist

Bw horizon:
Value—5 or 6 dry, 4 or 5 moist
Texture—cobbly silt loam, very cobbly silt loam, or cobbly loam
Rock fragment content—15 to 50 percent

Little Wood Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate to a depth of 24 inches and very rapid below
Landform: Dissected alluvial terraces
Parent material: Loess, and colluvium and residuum derived from old alluvium
Slope range: 6 to 30 percent
Elevation: 4,800 to 5,400 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 46 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Loamy-skeletal, mixed, frigid Ultic Argixerolls

Typical Pedon

A—0 to 4 inches; dark brown (10YR 4/3) sandy loam, very dark brown (10YR 2/2) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular pores; 10 percent gravel; slightly acid (pH 6.5); clear smooth boundary.

AB—4 to 10 inches; dark brown (10YR 5/3) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine interstitial and tubular pores and few medium interstitial pores; 10 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

Bt—10 to 24 inches; light yellowish brown (10YR 5/4) very gravelly sandy clay loam, yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; 35 percent gravel and 10 percent cobbles; few faint clay films on faces of peds and rock fragments; slightly acid (pH 6.2); gradual wavy boundary.

Bq—24 to 60 inches; brown (7.5YR 5/4) extremely gravelly loamy coarse sand, dark brown (7.5YR 4/4) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; 50 percent gravel and 15 percent cobbles; thin (1 millimeter thick) coatings of silica on underside of rock fragments; slightly acid (pH 6.4).

Typical Pedon Location

Map unit in which located: Little Wood sandy loam, 6 to 30 percent slopes
Location in survey area: About 15 miles north of Gooding; about 200 feet north and 830 feet east of the southwest corner of sec. 11, T. 3 S., R. 15 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 16 inches
Rock fragment content in particle-size control section—35 to 65 percent
Average annual soil temperature—45 to 47 degrees F

A and AB horizons:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Rock fragment content—0 to 15 percent gravel

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Rock fragment content—35 to 50 percent gravel and 10 to 15 percent cobbles
Texture—very gravelly clay loam, very gravelly sandy clay loam, or very gravelly loam
Clay content—20 to 35 percent

Lobeisner Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt buttes
Parent material: Silty alluvium
Slope range: 1 to 3 percent
Elevation: 4,200 to 4,500 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Fine-silty, mixed, mesic Calciorthidic Haploxerolls

Typical Pedon

Ap—0 to 5 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure; hard, friable, slightly sticky and slightly plastic; many fine roots and few very fine and medium roots; few very fine, fine, and medium interstitial and vesicular pores; mildly alkaline (pH 7.4); clear smooth boundary.

AB—5 to 10 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine, fine, and medium vesicular and tubular pores; mildly alkaline (pH 7.4); clear smooth boundary.

Bw—10 to 17 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine, fine, and medium vesicular and tubular pores; mildly alkaline (pH 7.4); clear smooth boundary.

Bk1—17 to 26 inches; pale brown (10YR 6/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure breaking to moderate fine and medium angular blocky; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; violently effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2); clear wavy boundary.

Bk2—26 to 45 inches; very pale brown (10YR 7/3) silt loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine and few coarse tubular pores; strongly effervescent matrix, many large soft violently effervescent bodies and seams (about 25 percent calcium carbonate equivalent); moderately alkaline (pH 8.0); abrupt smooth boundary.

2Bkq—45 to 58 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak medium platy structure; discontinuous and weakly cemented; hard, very firm, slightly sticky and slightly plastic; few very fine interstitial pores; continuous moderately thick pressure faces; few fine and medium violently effervescent segregated seams, noneffervescent matrix (about 20 percent calcium carbonate equivalent); 5 percent weakly cemented nodules; mildly alkaline (pH 7.8); clear smooth boundary.

2Btkb—58 to 68 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; few very fine interstitial pores; continuous moderately thick pressure faces; few faint clay films on faces of peds and lining pores; common fine violently effervescent segregated seams, noneffervescent matrix (about 20 percent calcium carbonate equivalent); mildly alkaline (pH 7.8).

Typical Pedon Location

Map unit in which located: Lobeisner silt loam, 1 to 3 percent slopes

Location in survey area: About 6 miles west of Richfield; 2,500 feet north and 600 feet west of the southeast corner of sec. 13, T. 4 S., R. 19 E.

Range in Characteristics

Profile:
Depth to secondary lime—16 to 27 inches
Thickness of mollic epipedon—10 to 20 inches
Rock fragment content—0 to 2 percent above discontinuity and 0 to 5 percent below
Average annual soil temperature—47 to 50 degrees F

Ap horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

AB horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 1 to 3 moist
Clay content—18 to 25 percent

Bw horizon:
Value—5 to 7 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Clay content—18 to 25 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—4 to 7 dry, 2 to 5 moist
Chroma—2 to 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—18 to 28 percent
Calcium carbonate equivalent—15 to 40 percent
Reaction—mildly alkaline to strongly alkaline

2Bkq horizon:
Value—4 to 7 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, or silty clay loam
Clay content—18 to 28 percent
Calcium carbonate equivalent—15 to 40 percent
Reaction—mildly alkaline to strongly alkaline

2Btkb horizon:
Value—5 to 7 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist
Texture—clay loam, silty clay loam, or silt loam
Clay content—18 to 30 percent
Calcium carbonate equivalent—15 to 40 percent
Reaction—mildly alkaline to strongly alkaline

Loupence Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Stream terraces
Parent material: Alluvium
Slope range: 0 to 1 percent
Elevation: 3,500 to 4,200 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 46 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-silty, mixed, mesic Cumulic Haploxerolls

Typical Pedon

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to moderate fine, medium, and coarse granular; very hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; common very fine and fine tubular pores; neutral (pH 6.6); abrupt wavy boundary.

BA—5 to 11 inches; grayish brown (10YR 5/2) silty clay loam, very dark brown (10YR 2/2) moist; moderate fine angular blocky structure; very hard, friable, sticky and plastic; few very fine, fine, and medium roots; few very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.

Bw1—11 to 19 inches; grayish brown (10YR 5/2) silty clay loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to moderate fine subangular blocky; very hard, very friable, slightly sticky and plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; neutral (pH 6.9); gradual wavy boundary.

Bw2—19 to 28 inches; grayish brown (10YR 5/2) silt loam, dark brown (10YR 3/3) moist; weak medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine and few medium tubular pores; neutral (pH 6.8); clear wavy boundary.

Bw3—28 to 42 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; neutral (pH 6.7); clear wavy boundary.

Bw4—42 to 67 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Quencheroo-Loupence complex, 0 to 1 percent slopes

Location in survey area: About 0.5 mile east of Gooding; about 1,300 feet north and 2,580 feet east of the southwest corner of sec. 5, T. 6 S., R. 15 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Clay content in particle-size control section—18 to 28 percent
Average annual soil temperature—48 to 54 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

BA, Bw1, and Bw2 horizons:
Value—3 or 4 moist
Chroma—1 to 3 dry or moist
Texture—silt loam or silty clay loam
Clay content—18 to 28 percent

Bw3 and Bw4 horizons:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam, silt loam, loam, or silty clay loam
Clay content—14 to 28 percent
Quantity of relict mottles—few to common in some pedons

Marley Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and buttes
Parent material: Loess over weathered loess
Slope range: 1 to 15 percent

Elevation: 4,200 to 4,800 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Fine-silty, mixed, mesic Aridic Calcic Argixerolls

Typical Pedon

Ap1—0 to 1 inch; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine tubular pores; neutral (pH 7.2); clear smooth boundary.

Ap2—1 inch to 4 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak thin platy structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 6.8); clear wavy boundary.

Ap3—4 to 8 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

Bt1—8 to 12 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; neutral (pH 7.0); abrupt wavy boundary.

Bt2—12 to 19 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; moderate fine prismatic structure parting to strong fine subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; common distinct clay films on faces of peds and lining pores; neutral (pH 6.8); abrupt smooth boundary.

Btb—19 to 29 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse prismatic structure; very hard, firm, sticky and plastic; common very fine and fine roots; few very fine and fine tubular pores; slickensides on faces of peds; 1 percent fine gravel near faces of peds; many distinct clay films on faces of peds and lining pores; mildly alkaline (pH 7.4); clear wavy boundary.

Btkb—29 to 36 inches; pale brown (10YR 6/3) silty clay loam, yellowish brown (10YR 5/4) moist; strong medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; 1 percent gravel and 5 percent cobbles; common prominent clay films on faces of peds and lining pores; violently effervescent (about 5 percent calcium carbonate equivalent); soft lime masses on faces of peds; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkb—36 to 42 inches; very pale brown (10YR 8/3) silty clay loam, pale brown (10YR 6/3) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; 5 percent gravel and 5 percent cobbles; violently effervescent (about 30 percent calcium carbonate equivalent); soft lime masses on faces of peds; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkqmb—42 to 66 inches; very pale brown (10YR 8/3) strongly cemented duripan, yellowish brown (10YR 5/4) moist; massive; 10 percent gravel and 20 percent cobbles; violently effervescent.

Typical Pedon Location

Map unit in which located: Marley-Kinzie complex, 1 to 4 percent slopes
Location in survey area: About 4 miles north and 2 miles west of Richfield; about 600 feet west and 50 feet north of the southeast corner of sec. 32, T. 3 S., R. 19 E.

Range in Characteristics

Profile:
Depth to duripan—41 to 60 inches
Depth to secondary lime—19 to 40 inches
Thickness of mollic epipedon—9 to 15 inches
Organic matter content in upper 16 inches—2 to 4 percent
Clay content in particle-size control section—23 to 35 percent
Average annual soil temperature—47 to 50 degrees F
Reaction—neutral to moderately alkaline

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Clay content—23 to 35 percent
Texture—silt loam or silty clay loam

Btb horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 45 percent
Texture—silty clay, clay, or silty clay loam

Btkb horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 45 percent
Texture—silty clay, clay, or silty clay loam
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles
Calcium carbonate equivalent—0 to 5 percent

Bkb horizon:
Hue—10YR or 7.5YR
Value—7 or 8 dry, 6 or 7 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, loam, or silty clay loam
Clay content—25 to 30 percent
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles
Calcium carbonate equivalent—16 to 40 percent

Bkqmb horizon:
Thickness of laminar caps—1 millimeter to 3 millimeters
Cementation between caps—weak to strong

McCarey Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Loess or silty alluvium
Slope range: 1 to 20 percent
Elevation: 4,700 to 5,400 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 46 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Calcic Argixerolls

Typical Pedon

A1—0 to 5 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many fine interstitial pores; neutral (pH 7.2); clear smooth boundary.

A2—5 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; strong fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.8); clear wavy boundary.

Bt—11 to 18 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; strong medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine, fine, medium, and coarse tubular pores; few faint clay films lining pores; 5 percent gravel and 5 percent cobbles; moderately alkaline (pH 8.0); abrupt wavy boundary.

Bk1—18 to 23 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few very fine roots; few very fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk2—23 to 28 inches; white (10YR 8/2) silt loam, light gray (10YR 7/2) moist; massive; very hard, firm, nonsticky and nonplastic; few very fine and fine roots; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.6); abrupt irregular boundary.

2R—28 inches; basalt.

Typical Pedon Location

Map unit in which located: McCarey-Beartrap complex, 1 to 6 percent slopes
Location in survey area: About 4 miles south and 1 mile east of Rattlesnake Butte; about 2,500 feet south and 800 feet west of the northeast corner of sec. 31, T. 2 S., R. 28 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Depth to secondary lime—15 to 25 inches
Clay content in particle-size control section—20 to 34 percent
Average annual soil temperature—45 to 47 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bt horizon:
Hue—5YR to 10YR
Value—5 or 6 dry, 3 to 5 moist

Chroma—2 to 4 dry or moist
Rock fragment content—0 to 10 percent
Reaction—neutral to moderately alkaline

Bk horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or loam
Reaction—neutral to strongly alkaline
Calcium carbonate equivalent—15 to 30 percent

McHandy Series

Depth class: Deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Plateaus, mesas, and escarpments
Parent material: Weathered loess
Slope range: 1 to 30 percent
Elevation: 3,600 to 4,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Chromic Haploxererts

Typical Pedon

A—0 to 2 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine and medium granular structure; soft, very friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine interstitial pores and common fine and very fine tubular pores; common cracks 2.5 centimeters wide; neutral (pH 7.0); abrupt smooth boundary.

Bss1—2 to 19 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; common intersecting slickensides and pressure faces; common continuous cracks 1.0 centimeter to 2.5 centimeters wide that are filled with A horizon material; mildly alkaline (pH 7.5); clear smooth boundary.

Bss2—19 to 42 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; common very fine and fine roots on faces of peds; few very fine and fine tubular pores; common distinct intersecting slickensides and pressure faces; common continuous cracks 1.0 centimeter to 1.5 centimeters wide; 3 percent gravel; mildly alkaline (pH 7.6); gradual wavy boundary.

Bssk—42 to 53 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/6) moist; very pale brown (10YR 7/3) veins of calcium carbonate, brown (10YR 5/3) moist; moderate medium and coarse prismatic structure; very hard, firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots in cracks; few very fine and fine tubular pores; few distinct nonintersecting slickensides and pressure faces; 2 percent gravel; mildly alkaline (pH 7.6); slightly effervescent near gravel; clear wavy boundary.

Bkqm—53 to 60 inches; pink (7.5YR 7/4) strongly cemented duripan, strong brown (7.5YR 4/6) moist; violently effervescent.

Typical Pedon Location

Map unit in which located: McHandy-Thorncreek complex, 1 to 6 percent slopes

Location in survey area: About 10 miles north and 3 miles west of Bliss; about 2,250 feet north and 300 feet west of the southeast corner of sec. 16, T. 5 S., R. 12 E.

Range in Characteristics

Profile:
Depth to duripan—40 to 60 inches
Clay content in particle-size control section—35 to 60 percent
Amount of intersecting slickensides—few to common in Bss horizon
Presence of cracks—open July through October and closed in winter; 1 centimeter to 3 centimeters wide at a depth of 20 to 48 inches and extending upwards to the surface
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bss and Bssk horizons:
Hue—10YR or 7.5YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—3 to 6 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 60 percent
Calcium carbonate equivalent—0 to 10 percent
Reaction—neutral or mildly alkaline
Rock fragment content—0 to 10 percent gravel and 0 to 5 percent cobbles

McPan Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Loess and silty alluvium
Slope range: 1 to 20 percent
Elevation: 3,200 to 4,700 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-silty, mixed, mesic Xerollic Durargids

Typical Pedon

Ap—0 to 6 inches; brown (10YR 5/3) silt loam, dark yellowish brown (10YR 3/4) moist; weak very fine, fine, and medium subangular blocky structure parting to moderate fine and medium granular; hard, very friable, nonsticky and nonplastic; common very fine and few fine roots; many very fine and common fine and medium interstitial pores; 5 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bt—6 to 10 inches; brown (10YR 4/3) silty clay loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium prismatic structure parting to strong fine, medium, and coarse subangular blocky; hard, friable, sticky and plastic; common very fine roots and few fine, medium, and coarse roots; common very fine tubular pores and few very fine interstitial pores; 5 percent cobbles; few faint clay films on faces of peds and lining pores; neutral (pH 7.0); clear wavy boundary.

Btk—10 to 20 inches; dark yellowish brown (10YR 4/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; very pale brown (10YR 8/3) veins of lime; moderate very fine, fine, and medium subangular blocky structure; hard, very friable, sticky and plastic; common very fine and few fine roots; common very fine tubular pores and few very fine interstitial pores; 5 percent cobbles; few faint clay films on faces of peds and lining pores; slightly effervescent (about 10 percent calcium carbonated equivalent); disseminated lime; mildly alkaline (pH 7.5); clear wavy boundary.

Bkq1—20 to 24 inches; very pale brown (10YR 7/3) cobbly loam, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine tubular pores; 5 percent gravel and 10 percent cobbles; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime and coatings of lime and silica 1 millimeter to 2 millimeters thick on sides and underside of rock fragments; mildly alkaline (pH 7.7); abrupt wavy boundary.

Bkq2—24 to 27 inches; very pale brown (10YR 7/3) cobbly loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; 5 percent gravel and 10 percent cobbles; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime and coatings of lime and silica 1 millimeter to 2 millimeters thick on sides and underside of rock fragments; mildly alkaline (pH 7.7); abrupt wavy boundary.

Bkqm—27 to 29 inches; white (10YR 8/2), lime- and silica-cemented, indurated duripan; silica cap less than 1 millimeter thick at a depth of 27 inches; 15 percent gravel and 15 percent cobbles; violently effervescent; abrupt wavy boundary.

2R—29 inches; basalt.

Typical Pedon Location

Map unit in which located: Elijah-McPan complex, 2 to 6 percent slopes

Location in survey area: About 4 miles north and 3 miles west of Gooding; about 400 feet east and 1,650 feet north of the southwest corner of sec. 14, T. 5 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—21 to 40 inches
Depth to duripan—20 to 39 inches
Clay content in particle-size control section—20 to 32 percent
Depth to secondary lime—10 to 36 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—slightly acid to moderately alkaline

Ap horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Rock fragment content—0 to 5 percent cobbles

Btk horizon:
Value—4 to 8 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam

Rock fragment content—0 to 5 percent cobbles
Calcium carbonate equivalent—5 to 10 percent

Bkq horizon:
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—loam, silt loam, or cobbly loam
Rock fragment content—0 to 20 percent
Calcium carbonate equivalent—20 to 30 percent

Bkqm horizon:
Thickness of laminar caps—0.5 millimeter to 4.0 millimeters
Distance between laminar caps—0 to 2 inches

Minveno Series

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt buttes and plains
Parent material: Eolian deposits
Slope range: 1 to 10 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy, mixed, mesic, shallow Xerollic Durorthids

Typical Pedon

Ap—0 to 3 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak thin and medium platy structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine tubular pores; 3 percent gravel; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

Bk1—3 to 10 inches; brown (10YR 5/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; 3 percent gravel; strongly effervescent (about 25 percent calcium carbonate equivalent); disseminated lime and soft masses of lime; mildly alkaline (pH 7.4); clear wavy boundary.

Bk2—10 to 13 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 3 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime and soft masses of lime; mildly alkaline (pH 7.6); clear wavy boundary.

Bkq—13 to 17 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; strong medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; 10 percent cemented nodules; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime and soft masses of lime; moderately alkaline (pH 8.2); abrupt smooth boundary.

2Bkqm—17 to 22 inches; very pale brown (10YR 8/3) indurated duripan, pale brown (10YR 6/3) moist; continuous laminar cap at a depth of 17 inches; 5 percent gravel; violently effervescent; abrupt wavy boundary.

3R—22 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Ticeska-Taunton-Minveno complex, 1 to 3 percent slopes

Location in survey area: About 1/2 mile south and 1 mile east of Wendell; about 1,500 feet west and 1,900 feet north of the southeast corner of sec. 3, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Depth to duripan—10 to 20 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Rock fragment content—0 to 10 percent

Bk horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or loam
Clay content—10 to 18 percent
Rock fragment content (may be duripan fragments)—0 to 10 percent
Reaction—mildly alkaline or moderately alkaline
Calcium carbonate equivalent—15 to 40 percent

Bkq horizon:
Value—6 to 8 dry, 4 to 7 moist

Chroma—2 to 4 dry or moist
Texture—very fine sandy loam or loam
Clay content—10 to 18 percent
Rock fragment content—0 to 10 percent
Reaction—mildly alkaline or moderately alkaline
Calcium carbonate equivalent—15 to 40 percent
Nodule content (weakly cemented to strongly cemented)—0 to 10 percent

2Bkqm horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Thickness of laminar caps—1 millimeter to 3 millimeters
Distance between caps—0.5 to 1.0 inch
Cementation between caps—strong or indurated
Rock fragment content—5 to 10 percent gravel and 10 to 20 percent cobbles

Molyneux Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains, canyonsides, and foothills
Parent material: Alluvium and colluvium derived from mixed sources
Slope range: 2 to 35 percent
Elevation: 4,800 to 5,800 feet
Average annual precipitation: 12 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Ultic Argixerolls

Typical Pedon

A1—0 to 7 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; many very fine and fine interstitial pores; neutral (pH 6.8); clear wavy boundary.

A2—7 to 13 inches; yellowish brown (10YR 5/4) loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, medium, and coarse roots; common very fine and fine tubular pores; neutral (pH 7.0); gradual wavy boundary.

Bt1—13 to 25 inches; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; strong fine and medium angular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common distinct clay films lining pores and on faces of peds; white (10YR 8/2) bleached sand and silt grains on faces of peds; neutral (pH 7.0); gradual wavy boundary.

Bt2—25 to 48 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; strong fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; white (10YR 8/2) bleached sand and silt grains on faces of peds; few faint clay films on faces of peds; neutral (pH 7.2); clear wavy boundary.

Bt3—48 to 62 inches; very pale brown (10YR 7/4) loam, pale brown (10YR 6/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; few fine and medium tubular pores; few faint clay films on faces of peds; neutral (pH 7.3).

Typical Pedon Location

Map unit in which located: McCarey-Molyneux-Rock outcrop complex, 2 to 15 percent slopes
Location in survey area: About 3 miles east and 1 mile north of Antelope Lake; 900 feet south and 50 feet east of the northwest corner of sec. 9, T. 2 S., R. 29 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—50 to 75 percent in the upper 30 inches
Average annual soil temperature—45 to 47 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Reaction—slightly acid or neutral

Bt1 and Bt2 horizons:
Value—3 to 5 dry, 2 to 5 moist
Chroma—2 to 4 dry or moist
Clay content—22 to 35 percent
Texture—clay loam, loam, cobbly loam, gravelly sandy clay loam, or cobbly clay loam
Reaction—slightly acid or neutral

Bt3 horizon:
Hue—10YR or 7.5YR
Value—5 to 7 dry, 3 to 6 moist
Chroma—3 or 4 dry or moist
Clay content—20 to 35 percent

Texture—gravelly sandy clay loam, gravelly clay loam, clay loam, or loam
Rock fragment content—5 to 20 percent gravel and 0 to 15 percent cobbles
Reaction—slightly acid to mildly alkaline

Moreglade Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills and canyonsides
Parent material: Colluvium and residuum derived from welded tuff, rhyolite, and basalt
Slope range: 12 to 65 percent
Elevation: 4,700 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 41 to 43 degrees F
Frost-free period: 60 to 90 days

Taxonomic class: Loamy-skeletal, mixed, frigid Pachic Ultic Argixerolls

Typical Pedon

A1—0 to 7 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; weak fine and very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular and tubular pores and common medium irregular pores; 15 percent gravel, 20 percent cobbles, and 25 percent stones; slightly acid (pH 6.2); clear wavy boundary.
A2—7 to 12 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; weak fine and very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular and tubular pores and few medium irregular pores; 35 percent gravel and 10 percent cobbles; slightly acid (pH 6.1); gradual wavy boundary.
A3—12 to 26 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular and tubular pores and few medium irregular pores; 35 percent gravel and 10 percent cobbles; slightly acid (pH 6.2); gradual wavy boundary.
Bt1—26 to 42 inches; brown (10YR 5/3) very cobbly clay loam, pale brown (10YR 4/3) moist; moderate fine and very fine subangular blocky structure; hard, friable, sticky and very plastic; common very fine and fine roots; common very fine and fine irregular and tubular pores; few distinct clay films on faces of peds; 15 percent gravel and 35 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.
Bt2—42 to 60 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark yellowish brown (10YR 4/4) moist; weak very fine, fine, and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores and few very fine and fine irregular pores; few faint clay films on faces of peds; 20 percent gravel and 35 percent cobbles; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Fergie-Moreglade-Terracecreek association, 25 to 65 percent slopes
Location in survey area: About 17.5 miles north and 3 miles east of Bliss; about 600 feet south and 650 feet west of the northeast corner of sec. 9, T. 3 S., R. 13 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 42 inches
Rock fragment content in particle-size control section—35 to 75 percent
Average annual soil temperature—43 to 45 degrees F

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Rock fragment content—5 to 50 percent gravel, 5 to 35 percent cobbles, 5 to 25 percent stones, and 0 to 15 percent boulders

Bt horizon:
Value—5 or 6 dry, 2 to 5 moist
Chroma—3 to 6 dry or moist
Rock fragment content—15 to 40 percent gravel, 15 to 50 percent cobbles, and 5 to 10 percent stones
Texture—very cobbly clay loam, extremely cobbly clay loam, very cobbly loam, very gravelly loam, or extremely cobbly loam

Mug Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Very slow

Landform: Basalt plains and foothills
Parent material: Loess over weathered loess, and residuum derived from welded tuff and basalt
Slope range: 1 to 12 percent
Elevation: 5,000 to 5,800 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Ultic Palexerolls

Typical Pedon

A—0 to 4 inches; dark grayish brown (10YR 4/2) extremely stony loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to moderate very fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots and few coarse roots; many very fine, fine, medium, and coarse vesicular pores; 5 percent gravel, 10 percent cobbles, and 50 percent stones; slightly acid (pH 6.4); gradual wavy boundary.

BA—4 to 8 inches; brown (10YR 5/3) extremely stony loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure, slightly hard, very friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; few very fine, fine, medium, and coarse tubular pores; 10 percent gravel, 10 percent cobbles, and 50 percent stones; slightly acid (pH 6.5); abrupt wavy boundary.

Btb1—8 to 16 inches; brown (10YR 5/3) extremely cobbly silty clay, dark brown (10YR 4/2) moist; strong medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine, fine, and medium roots; few very fine, fine, and medium tubular pores; many faint clay films on faces of peds and lining pores; 15 percent gravel and 60 percent cobbles; neutral (pH 6.9); clear wavy boundary.

Btb2—16 to 24 inches; yellowish brown (10YR 5/4) extremely cobbly silty clay loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, medium, and coarse roots; few very fine, fine, and medium tubular pores; many faint clay films on faces of peds and lining pores; 5 percent gravel, 60 percent cobbles, and 15 percent stones; neutral (pH 6.6); gradual wavy boundary.

R—24 inches; basalt.

Typical Pedon Location

Map unit in which located: Mug-Polecreek-Rock outcrop complex, 1 to 12 percent slopes
Location in survey area: About 16 miles north and 2 miles west of Shoshone; 250 feet south and 950 feet east of the northwest corner of sec. 10, T. 3 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—7 to 12 inches
Average annual soil temperature—45 to 46 degrees F

A and BA horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—60 to 80 percent
Reaction—moderately acid to neutral

Btb horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry
Chroma—3 or 4 dry or moist
Texture—extremely cobbly silty clay loam, extremely cobbly silty clay, or very cobbly silty clay
Clay content—35 to 60 percent
Rock fragment content—50 to 80 percent
Reaction—moderately acid to neutral

Mulshoe Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills
Parent material: Colluvium and residuum derived from welded tuff and rhyolite
Slope range: 1 to 35 percent
Elevation: 5,000 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 41 to 43 degrees F
Frost-free period: 60 to 75 days

Taxonomic class: Loamy-skeletal, mixed, frigid Ultic Argixerolls

Typical Pedon

A—0 to 4 inches; very dark grayish brown (10YR 3/2) extremely bouldery loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine tubular and interstitial pores, many medium interstitial pores, and common medium tubular pores; 1 percent gravel, 5 percent cobbles, 25 percent stones, and 20 percent boulders; moderately acid (pH 5.8); clear broken boundary.

AB—4 to 10 inches; dark brown (10YR 3/3) extremely bouldery loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine, fine, and medium tubular and interstitial pores; 15 percent gravel, 5 percent cobbles, 20 percent stones, and 30 percent boulders; moderately acid (pH 6.0); gradual wavy boundary.

Bt—10 to 31 inches; brown (7.5YR 5/3) very stony clay loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; extremely hard, firm, sticky and plastic; few very fine and fine roots, mostly matted on faces of stones and boulders; common fine tubular and interstitial pores; common prominent clay films on faces of peds; 15 percent gravel, 5 percent cobbles, 20 percent stones, and 15 percent boulders; slightly acid (pH 6.1); gradual wavy boundary.

BC—31 to 38 inches; brown (7.5YR 5/3) very stony clay loam, dark brown (7.5YR 4/3) moist; massive; soft, firm, sticky and plastic; few very fine and fine roots, mostly matted on faces of stones and boulders; few fine tubular and interstitial pores; 10 percent gravel, 5 percent cobbles, 20 percent stones, and 15 percent boulders; moderately acid (pH 5.9); clear irregular boundary.

R—38 inches; welded tuff.

Typical Pedon Location

Map unit in which located: Elkcreek-Mulshoe-Simonton complex, 1 to 12 percent slopes
Location in survey area: About 17 miles north and 6 miles west of Gooding; about 1,250 feet north and 150 feet west of the southeast corner of sec. 6, T. 3 S., R. 16 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—7 to 14 inches
Base saturation—50 to 75 percent in upper 30 inches
Clay content in particle-size control section—28 to 35 percent
Average annual soil temperature—43 to 45 degrees F
Reaction—moderately acid or slightly acid

A and AB horizons:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—very stony clay loam, very bouldery clay loam, or very bouldery sandy clay loam
Clay content—28 to 35 percent
Rock fragment content—35 to 60 percent

BC horizon:
Texture—very stony clay loam or very bouldery clay loam

Nammoth Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Foothills, buttes, and basalt plains
Parent material: Loess, and colluvium and residuum derived from welded tuff, rhyolite, and basalt
Slope range: 1 to 35 percent
Elevation: 4,200 to 5,000 feet.
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Aridic Argixerolls

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) extremely bouldery loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine vesicular pores and common medium and coarse vesicular pores; 15 percent gravel, 10 percent cobbles, 20 percent stones, and 30 percent boulders; moderately acid (pH 5.9); clear wavy boundary.

A2—2 to 5 inches; brown (10YR 5/3) extremely bouldery loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to moderate medium granular; soft, very friable, slightly sticky and slightly plastic; common very fine, fine, medium, and coarse roots; common very fine, fine, medium, and coarse vesicular pores; 15 percent gravel, 10 percent cobbles, 20 percent stones, and 30 percent boulders; slightly acid (pH 6.4); gradual wavy boundary.

BA—5 to 8 inches; brown (10YR 5/3) extremely bouldery loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; few very fine, fine, medium, and coarse tubular pores; 15 percent gravel, 10 percent cobbles, 20 percent stones, and 30 percent boulders; slightly acid (pH 6.5); gradual wavy boundary.

Bt1—8 to 13 inches; brown (10YR 5/3) extremely bouldery clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, very sticky and very plastic; few very fine, fine, medium, and coarse roots; few very fine, fine, medium, and coarse tubular pores; many faint clay films on faces of peds and lining pores; 20 percent gravel, 10 percent cobbles, 10 percent stones, and 25 percent boulders; slightly acid (pH 6.2); gradual wavy boundary.

Bt2—13 to 23 inches; yellowish brown (10YR 5/4) extremely bouldery clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots; few very fine, fine, medium, and coarse tubular pores; many faint clay films on faces of peds and lining pores; 15 percent gravel, 10 percent cobbles, 20 percent stones, and 25 percent boulders; slightly acid (pH 6.3); abrupt irregular boundary.

R—23 inches; fractured welded tuff.

Typical Pedon Location

Map unit in which located: Nammoth-Rock outcrop-Quiero complex, 8 to 35 percent slopes

Location in survey area: About 10 miles north and 2 miles west of Shoshone; 1,500 feet north and 1,500 feet west of the southeast corner of sec. 16, T. 4 S., R. 17 E.

Range in Characteristics

Profile:

Depth to bedrock—20 to 40 inches

Thickness of mollic epipedon—7 to 12 inches

Average annual soil temperature—47 to 50 degrees F

A and BA horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Rock fragment content—15 to 20 percent gravel, 10 to 15 percent cobbles, 20 to 25 percent stones, and 25 to 40 percent boulders

Reaction—moderately acid to neutral

Bt1 horizon:

Hue—10YR or 7.5YR

Chroma—3 or 4 dry or moist

Texture—extremely bouldery clay loam, very stony silty clay loam, or very stony clay loam

Clay content—30 to 40 percent

Rock fragment content—5 to 20 percent gravel, 5 to 15 percent cobbles, 10 to 15 percent stones, and 25 to 35 percent boulders

Reaction—moderately acid or slightly acid

Bt2 horizon:

Hue—10YR or 7.5YR

Chroma—3 or 4 dry or moist

Texture—extremely bouldery clay, very bouldery clay loam, extremely bouldery clay loam, or very stony clay loam

Clay content—35 to 50 percent

Rock fragment content—5 to 20 percent gravel, 5 to 20 percent cobbles, 10 to 20 percent stones, and 15 to 25 percent boulders

Reaction—moderately acid or slightly acid

Pagari Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits
Slope range: 2 to 15 percent
Elevation: 4,400 to 4,800 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Loamy-skeletal, mixed, mesic Aridic Calcic Argixerolls

Typical Pedon

A1—0 to 3 inches; grayish brown (10YR 5/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine interstitial pores; 5 percent gravel, 40 percent cobbles, and 10 percent stones; neutral (pH 7.0); clear wavy boundary.

A2—3 to 11 inches; brown (10YR 5/3) very cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; common very fine and fine tubular pores; 5 percent gravel, 40 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear wavy boundary.

AB—11 to 17 inches; brown (10YR 5/3) very cobbly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; common very fine and fine tubular pores; about 10 percent stones, 40 percent cobbles, and 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt—17 to 31 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and medium roots; common very fine and fine tubular pores; few faint clay films on faces of peds and bridging sand grains; 10 percent gravel, 40 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear wavy boundary.

Bk1—31 to 36 inches; pale brown (10YR 6/3) extremely cobbly loam, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; 15 percent gravel, 40 percent cobbles, and 10 percent stones; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

Bk2—36 to 46 inches; very pale brown (10YR 7/3) extremely cobbly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel, 40 percent cobbles, and 10 percent stones; violently effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); abrupt irregular boundary.

2R—46 inches; basalt.

Typical Pedon Location

Map unit in which located: Pagari-Rehfield complex, 2 to 15 percent slopes

Location in survey area: About 9 miles east and 2 miles south of Carey; about 1,250 feet east and 100 feet north of the southwest corner of sec. 12, T. 2 S., R. 22 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to secondary lime—24 to 36 inches
Thickness of mollic epipedon—10 to 17 inches
Average annual soil temperature—47 to 50 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—10 to 15 percent
Rock fragment content—35 to 60 percent

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—extremely cobbly loam, extremely cobbly sandy clay loam, or extremely cobbly clay loam
Total rock fragment content—60 to 75 percent
Content of rock fragments more than 3 inches in diameter—35 to 60 percent
Clay content—18 to 30 percent

Bk horizon:
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—extremely cobbly sandy loam, extremely cobbly sandy clay loam, or extremely cobbly loam
Total rock fragment content—60 to 75 percent
Content of rock fragments more than 3 inches in diameter—35 to 60 percent
Clay content—14 to 25 percent
Calcium carbonate equivalent—5 to 30 percent

Paulville Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Silty alluvium
Slope range: 0 to 6 percent
Elevation: 2,800 to 4,700 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical Pedon

A—0 to 6 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium and coarse granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots;

many very fine interstitial pores; few krotovinas 2 to 5 millimeters in diameter; neutral (pH 7.2); clear wavy boundary.

BA—6 to 15 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; few krotovinas 2 to 5 millimeters in diameter; mildly alkaline (pH 7.4); clear wavy boundary.

Bt1—15 to 22 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and medium roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—22 to 30 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, firm, sticky and plastic; common fine and medium roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bk1—30 to 33 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); clear wavy boundary.

Bk2—33 to 43 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; few very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); clear wavy boundary.

Bk3—43 to 50 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime and lime segregated in veins and soft masses; moderately alkaline (pH 8.0); abrupt wavy boundary.

2C—50 to 64 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine and fine interstitial pores; mildly alkaline (pH 7.6).

Typical Pedon Location

Map unit in which located: Paulville-McPan-Starbuck complex, 1 to 8 percent slopes

Location in survey area: About 11 miles north and 11 miles west of Minidoka; about 1,400 feet east and 50 feet south of the northwest corner of sec. 29, T. 5 S., R. 23 E.

Range in Characteristics

Profile:
Depth to secondary calcium carbonate—15 to 30 inches
Average annual soil temperature—50 to 53 degrees F

BA horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—18 to 25 percent
Reaction—neutral or mildly alkaline

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—loam, clay loam, or silty clay loam
Rock fragment content—0 to 5 percent
Clay content—24 to 31 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—6 or 7 dry, 5 or 6 moist
Chroma—2 to 4 dry or moist
Texture—loam or silt loam
Clay content—18 to 26 percent
Rock fragment content—0 to 5 percent
Calcium carbonate equivalent—15 to 27 percent
Reaction—mildly alkaline or moderately alkaline

2C horizon:
Value—4 to 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam or loamy fine sand
Rock fragment content—5 to 10 percent

Pedleford Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes

Parent material: Eolian deposits reworked by water
Slope range: 8 to 20 percent
Elevation: 4,700 to 5,400 feet
Average annual precipitation: 12 to 14 inches
Average annual air temperature: 42 to 45 degrees F
Frost-free period: 70 to 100 days

Taxonomic class: Loamy-skeletal, mixed, frigid Calcic Haploxerolls

Typical Pedon

A—0 to 6 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic, many very fine, fine, and medium roots; many very fine and fine interstitial pores; 5 percent gravel, 10 percent cobbles, and 35 percent stones; neutral (pH 7.2); gradual wavy boundary.

Bw—6 to 11 inches; brown (10YR 5/3) very stony loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 5 percent gravel, 10 percent cobbles, and 40 percent stones; neutral (pH 7.2); gradual wavy boundary.

Bk1—11 to 26 inches; pale brown (10YR 6/3) very stony loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; 5 percent gravel, 10 percent cobbles, and 40 percent stones; slightly effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.6); gradual wavy boundary.

Bk2—26 to 34 inches; very pale brown (10YR 7/3) very stony silt loam, pale brown (10YR 6/3) moist; massive; hard, firm, sticky and plastic; few very fine, fine, and medium roots; few fine tubular pores; 5 percent gravel, 15 percent cobbles, and 30 percent stones; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); abrupt wavy boundary.

2R—34 inches; basalt.

Typical Pedon Location

Map unit in which located: McCarey-Pedleford complex, 8 to 20 percent slopes
Location in survey area: About 9 miles south and 16 miles east of Carey; about 400 feet south and 600 feet west of the northeast corner of sec. 6, T. 3 S., R. 24 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Depth to secondary lime—13 to 20 inches
Thickness of mollic epipedon—10 to 14 inches
Average annual soil temperature—45 to 46 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—very stony sandy loam, very stony loam, or very cobbly loam
Rock fragment content—35 to 60 percent
Clay content—13 to 19 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 to 4 dry or moist
Texture—very stony silt loam, very stony loam, or very cobbly loam
Rock fragment content—35 to 60 percent
Clay content—10 to 16 percent
Reaction—mildly alkaline to strongly alkaline

Perla Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and buttes
Parent material: Loess over weathered loess, and residuum derived from basalt
Slope range: 1 to 8 percent
Elevation: 4,200 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Aridic Argixerolls

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine vesicular pores; trace of gravel; moderately acid (pH 5.7); abrupt smooth boundary.

BA—2 to 10 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate thin platy structure parting to moderate fine subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; trace of gravel; moderately acid (pH 5.8); clear wavy boundary.

Bt1—10 to 13 inches; dark brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; bleached silt grains on 20 to 30 percent of faces of peds; trace of gravel; slightly acid (pH 6.2); clear wavy boundary.

Bt2—13 to 24 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; strong fine and medium subangular blocky structure; very hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; bleached silt grains on 25 to 50 percent of faces of peds; trace of gravel; slightly acid (pH 6.2); clear smooth boundary.

Btb—24 to 29 inches; brown (7.5YR 5/4) silty clay, dark brown (7.5YR 4/4) moist; weak fine prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; few distinct clay films on faces of peds and lining pores; trace of gravel and 5 percent cobbles; slightly acid (pH 6.1); abrupt broken boundary.

2R—29 inches; weathered basalt.

Typical Pedon Location

Map unit in which located: Perla-Darrah-Ruckles complex, 1 to 4 percent slopes

Location in survey area: About 15 miles north and 3 miles west of Shoshone; 1,700 feet north and 1,500 feet east of the southwest corner of sec. 20, T. 3 S., R. 17 E.

Range in Characteristics

Profile:

Depth to bedrock—20 to 40 inches

Thickness of mollic epipedon—10 to 15 inches

Clay content in particle-size control section—35 to 50 percent

Average annual soil temperature—47 to 50 degrees F

Soil moisture content—dry for 45 to 90 days in summer

A and BA horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Rock fragment content—0 to 10 percent

Reaction—moderately acid to neutral

Bt horizon:

Value—5 or 6 dry

Chroma—3 or 4 dry or moist

Clay content—35 to 39 percent

Rock fragment content—0 to 15 percent

Reaction—moderately acid or slightly acid

Btb horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 4 or 5 moist

Chroma—3 or 4 dry or moist

Clay content—45 to 55 percent

Rock fragment content—5 to 25 percent

Reaction—moderately acid or slightly acid

Polecreek Series

Depth class: Shallow

Drainage class: Well drained

Permeability: Very slow

Landform: Basalt plains

Parent material: Loess over weathered loess, and residuum derived from basalt

Slope range: 1 to 12 percent

Elevation: 5,000 to 5,800 feet

Average annual precipitation: 13 to 16 inches

Average annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 90 days

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Lithic Ultic Argixerolls

Typical Pedon

A1—0 to 3 inches; dark grayish brown (10YR 4/2) very cobbly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine vesicular and tubular pores; 15 percent gravel and 20 percent cobbles; slightly acid (pH 6.2); clear smooth boundary.

A2—3 to 8 inches; dark grayish brown (10YR 4/2) very cobbly silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine interstitial and tubular pores; 10 percent gravel and 30 percent cobbles; slightly acid (pH 6.2); gradual wavy boundary.

Btb—8 to 16 inches; brown (10YR 4/3) extremely cobbly clay loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; very hard, firm, very sticky and very plastic; common very fine, fine, and medium roots and few coarse roots; common very fine, fine, and medium interstitial and tubular pores; many prominent clay films on faces of peds; 30 percent gravel, 35 percent cobbles, and 5 percent stones; neutral (pH 6.6); clear wavy boundary.

R—16 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Starhope-Polecreek-Mug complex, 1 to 12 percent slopes

Location in survey area: About 17 miles north and 4 miles west of Shoshone; about 2,200 feet north and 1,000 feet west of the southeast corner of sec. 7, T. 3 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Thickness of mollic epipedon—7 to 16 inches
Base saturation—50 to 75 percent
Average annual soil temperature—45 to 46 degrees F

A and BA horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—5 to 15 percent gravel, 10 to 35 percent cobbles, and 0 to 5 percent stones
Reaction—slightly acid or neutral

Btb horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—35 to 50 percent
Rock fragment content—30 to 45 percent gravel, 5 to 35 percent cobbles, and 0 to 5 percent stones
Reaction—slightly acid or neutral

Power Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Loess reworked by water
Slope range: 0 to 8 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-silty, mixed, mesic Xerollic Haplargids

Typical Pedon

Ap—0 to 6 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak thin and medium platy structure parting to weak fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; common very fine and fine interstitial pores and few very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.

BA—6 to 10 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine and few medium tubular pores; few faint clay films lining pores; neutral (pH 6.6); gradual wavy boundary.

Bt—10 to 23 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and plastic; few very fine, fine, and medium roots; common very fine and fine and few medium tubular pores; common faint clay films on faces of peds and lining pores; neutral (pH 6.8); clear wavy boundary.

Bk—23 to 29 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine interstitial pores and few very fine and fine tubular pores; slightly effervescent (about 15 percent calcium carbonate equivalent) disseminated lime; neutral (pH 7.2); clear wavy boundary.

Bkq1—29 to 40 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; 15 percent weakly cemented cicada nodules; moderately alkaline (pH 7.9); gradual wavy boundary.

Bkq2—40 to 47 inches; very pale brown (10YR 7/3) very fine sandy loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine interstitial pores and few very fine and fine tubular pores; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; 5 percent weakly cemented cicada nodules; moderately alkaline (pH 7.9); gradual wavy boundary.

Bkq3—47 to 64 inches; very pale brown (10YR 7/3) very fine sandy loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine and fine interstitial pores and few very fine tubular pores; violently effervescent (25 percent calcium carbonate equivalent); disseminated lime; 5 percent weakly cemented cicada nodules; moderately alkaline (pH 7.9).

Typical Pedon Location

Map unit in which located: Power silt loam, 0 to 3 percent slopes

Location in survey area: About 2 miles south and 1/4 mile east of Gooding; about 1,280 feet east and 50 feet north of the southwest corner of sec. 17, T. 6 S., R. 15 E.

Range in Characteristics

Profile:
Depth to secondary lime—19 to 27 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

BA horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—18 to 26 percent
Reaction—neutral or mildly alkaline

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, silty clay loam, or loam
Clay content—24 to 31 percent
Reaction—neutral or mildly alkaline

Bk and Bkq horizons:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Calcium carbonate equivalent—15 to 25 percent
Texture—silt loam, loam, or very fine sandy loam
Clay content—17 to 20 percent
Reaction—strongly alkaline or moderately alkaline

Purdam Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Loess reworked by water
Slope range: 0 to 12 percent
Elevation: 3,000 to 4,300 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-silty, mixed, mesic Haploxerollic Durargids

Typical Pedon

A—0 to 4 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine interstitial pores; neutral (pH 6.8); abrupt smooth boundary.

Bt1—4 to 13 inches; yellowish brown (10YR 5/6) silt loam, brown (10YR 4/3) moist; weak medium and thick platy structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and lining pores; neutral (pH 6.8); clear wavy boundary.

Bt2—13 to 21 inches; yellowish brown (10YR 5/4) silt loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine tubular pores; common faint clay films on faces of peds and lining pores; 10 percent friable cicada nodules; neutral (pH 6.9); clear smooth boundary.

Bkq—21 to 34 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine and fine tubular pores; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; 40 percent very hard cicada nodules; moderately alkaline (pH 8.1); clear wavy boundary.

Bkqm—34 to 59 inches; very pale brown (10YR 7/3) strongly cemented pan; massive; very hard, very firm; violently effervescent; abrupt wavy boundary.

2R—59 inches; basalt.

Typical Pedon Location

Map unit in which located: Snowmore-Purdam-Power complex, 4 to 12 percent slopes
Location in survey area: About 1.25 miles west and 0.5 mile south of Gooding; about 1,350 feet west and 1,000 feet south of the northeast corner of sec. 11, T. 6 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—40 inches or more
Depth to duripan—21 to 38 inches
Depth to secondary lime—11 to 28 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral to moderately alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bt horizon:
Chroma—3 to 6 dry or moist
Texture—silt loam or silty clay loam
Clay content—25 to 30 percent

Bkq horizon:
Value—5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—fine sandy loam, silt loam, or very fine sandy loam
Clay content—13 to 18 percent

2Bkqm horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Thickness of laminar caps—0.5 to 10 millimeters

Quencheroo Series

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Stream terraces
Parent material: Alluvium
Slope range: 0 to 2 percent
Elevation: 3,500 to 4,200 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Aridic Haploxerolls

Typical Pedon

Ap—0 to 5 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots and few medium roots; common very fine and fine and few medium and coarse vesicular and tubular pores; neutral (pH 6.8); clear smooth boundary.
Bw1—5 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; few very fine, fine, and medium tubular pores; neutral (pH 6.6); abrupt smooth boundary.
Bw2—11 to 21 inches; brown (10YR 5/3) loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; many very fine and fine and few medium tubular pores; neutral (pH 6.6); clear smooth boundary.
C1—21 to 30 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; few fine distinct mottles; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine and few medium tubular pores; 30 percent weakly cemented durinodes; neutral (pH 6.9); gradual smooth boundary.
C2—30 to 49 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; few fine and medium distinct mottles; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; trace of roots; few very fine and fine tubular pores; neutral (pH 6.9); abrupt smooth boundary.
2R—49 inches; fractured basalt with discontinuous lime and silica cap.

Typical Pedon Location

Map unit in which located: Quencheroo-Loupence complex, 0 to 1 percent slopes
Location in survey area: About $^{1}/_{2}$ mile west of Gooding; about 1,330 east and 750 feet south of the northwest corner of sec. 6, T. 6 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, clay loam, or sandy clay loam
Clay content—24 to 31 percent
Rock fragment content—0 to 5 percent

C horizon:
Value—4 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—loam, very fine sandy loam, silt loam, fine sandy loam, or sandy clay loam
Clay content—16 to 25 percent
Rock fragment content—0 to 5 percent
Quantity and contrast of relict mottles—few or common and faint or distinct

Quiero Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Foothills and buttes
Parent material: Loess, and residuum derived from welded tuff and rhyolite
Slope range: 1 to 15 percent
Elevation: 4,200 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 100 days

Taxonomic class: Fine-loamy, mixed, mesic Aridic Argixerolls

Typical Pedon

A1—0 to 3 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine and common medium tubular and interstitial pores; moderately acid (pH 6.0); clear wavy boundary.

A2—3 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine, common medium, and few coarse roots; many very fine and fine and common medium tubular and interstitial pores; moderately acid (pH 6.0); gradual wavy boundary.

Bt1—10 to 14 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine, fine, and medium tubular and interstitial pores; common faint clay films on faces of peds; slightly acid (pH 6.1); gradual wavy boundary.

Bt2—14 to 21 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; few very fine and fine tubular and interstitial pores; many distinct clay films on faces of peds; moderately acid (pH 5.8); gradual wavy boundary.

Bt3—21 to 36 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; few very fine, fine, and medium roots; few very fine, fine, and medium tubular and interstitial pores; many prominent clay films on faces of peds; moderately acid (pH 5.7); gradual wavy boundary.

R—36 inches; fractured, welded tuff.

Typical Pedon Location

Map unit in which located: Quiero-Ruckles-Nammoth complex, 1 to 12 percent slopes
Location in survey area: About 11 miles north and 2 miles west of Shoshone; 1,300 feet south and 1,600 feet east of the northwest corner of sec. 9, T. 4 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—7 to 12 inches
Average annual soil temperature—47 to 50 degrees F
Soil moisture content—dry for 45 to 90 days after July 15

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—0 to 15 percent
Reaction—moderately acid to neutral

Bt1 and Bt2 horizons:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam or clay loam
Clay content—25 to 35 percent
Rock fragment content—0 to 15 percent
Reaction—moderately acid or slightly acid

Bt3 horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry

Chroma—4 to 6 dry or moist
Texture—clay loam, clay, or gravelly clay loam
Clay content—35 to 45 percent
Rock fragment content—0 to 25 percent
Reaction—moderately acid or slightly acid

Quincy Series

Depth class: Very deep
Drainage class: Excessively drained
Permeability: Rapid
Landform: Basalt plains
Parent material: Eolian sand
Slope range: 1 to 4 percent
Elevation: 2,900 to 4,500 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Mixed, mesic Xeric Torripsamments

Typical Pedon

A—0 to 2 inches; light brownish gray (10YR 5/2) fine sand, grayish brown (10YR 5/2) moist; single grain; loose, very friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 6.8); gradual wavy boundary.
C1—2 to 43 inches; pale brown (10YR 6/3) fine sand, brown (10YR 5/3) moist; single grain; loose, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 7.0); gradual smooth boundary.
C2—43 to 61 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; single grain; loose, friable, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; neutral (pH 7.0).

Typical Pedon Location

Map unit in which located: Quincy fine sand, 1 to 4 percent slopes
Location in survey area: About 10 miles north of Lake Walcott; about 1,400 feet west of the northeast corner of sec. 20, T. 8 S., R. 26 E.

Range in Characteristics

Profile:
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist

C1 and C2 horizons:
Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—sand, loamy fine sand, or fine sand
Rock fragment content—0 to 5 percent

Rehfield Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 1 to 6 percent
Elevation: 4,300 to 4,800 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Fine-loamy, mixed, mesic Ultic Argixerolls

Typical Pedon

A—0 to 4 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium and thick platy structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; neutral (pH 6.8); clear wavy boundary.
AB—4 to 10 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; few bleached sand and silt grains on faces of peds; neutral (pH 7.0); gradual wavy boundary.
Bt1—10 to 18 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; few bleached sand and silt grains on faces of peds; few faint clay films bridging sand grains, lining pores, and on faces of peds; neutral (pH 7.2); clear wavy boundary.
Bt2—18 to 25 inches; light yellowish brown (10YR 6/4) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; few faint clay films lining pores; neutral (pH 7.2); clear wavy boundary.
C—25 to 60 inches; pale brown (10YR 6/3) very fine

sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; 10 percent cobbles; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Deerhorn-Rehfield-Rock outcrop complex, 2 to 15 percent slopes
Location in survey area: About 14 miles south and 3 miles west of Carey; about 3,340 feet south and 1,190 feet west of the northeast corner of sec. 15, T. 3 S., R. 20 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 14 inches
Base saturation in upper 30 inches—50 to 75 percent
Average annual soil temperature—47 to 49 degrees F
Reaction—slightly acid or neutral
Effective moisture—additional moisture received from runoff and snowdrifts

A and AB horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—loam, sandy loam, or sandy clay loam
Rock fragment content—0 to 5 percent
Clay content—18 to 31 percent

C horizon:
Chroma—3 or 4 dry or moist
Texture—gravelly loamy sand, loamy sand, or very fine sandy loam
Rock fragment content—0 to 15 percent

Rekima Series

Depth class: Shallow to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 1 to 15 percent
Elevation: 3,200 to 4,700 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy-skeletal, mixed, mesic, shallow Xerollic Durorthids

Typical Pedon

A—0 to 3 inches; brown (10YR 5/3) very stony fine sandy loam, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; 15 percent gravel, 10 percent cobbles, and 15 percent stones; neutral (pH 7.0); clear wavy boundary.

Bw1—3 to 6 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; 10 percent gravel, 25 percent cobbles, and 10 percent stones; neutral (pH 7.0); clear wavy boundary.

Bw2—6 to 15 inches; yellowish brown (10YR 5/4) very cobbly fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel, 25 percent cobbles, and 5 percent stones; neutral (pH 7.2); gradual wavy boundary.

Bkq—15 to 18 inches; brown (10YR 5/3) very cobbly fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots as mats on lime- and silica-coated basalt fragments; common very fine and fine tubular pores; 15 percent gravel, 25 percent cobbles, and 10 percent stones; slightly effervescent (about 10 percent calcium carbonate); disseminated lime; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bkqm—18 to 19 inches; very pale brown (10YR 7/3) indurated duripan, pale brown (10YR 6/3) moist; violently effervescent; abrupt wavy boundary.

2R—19 inches; lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Wendell-Wako-Rekima complex, 1 to 4 percent slopes
Location in survey area: About 2.5 miles south and 1 mile west of Wendell; about 2,350 feet east and

2,050 feet south of the northwest corner of sec. 17, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—17 to 20 inches
Depth to duripan—16 to 19 inches
Depth to secondary lime—14 to 16 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—3 or 4 moist

Bw horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—very stony fine sandy loam, very stony loam, or very cobbly fine sandy loam
Rock fragment content—5 to 10 percent gravel, 15 to 30 percent cobbles, and 5 to 15 percent stones
Clay content—10 to 14 percent

Bkq horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry or moist
Texture—very stony fine sandy loam, very stony loam, or very cobbly fine sandy loam
Rock fragment content—10 to 25 percent gravel, 15 to 35 percent cobbles, and 10 to 15 percent stones
Calcium carbonate equivalent—0 to 15 percent
Reaction—mildly alkaline or moderately alkaline
Clay content—10 to 18 percent

Bkqm horizon:
Cementation—strong or indurated
Thickness of laminar caps—0.5 millimeter to 4 millimeters
Thickness of duripan—0.1 millimeter to 25 millimeters

Ruckles Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and foothills
Parent material: Loess over weathered loess, and colluvium and residuum derived from welded tuff, rhyolite, and basalt
Slope range: 1 to 8 percent
Elevation: 4,200 to 5,000 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days
Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Lithic Argixerolls

Typical Pedon

A1—0 to 3 inches; brown (10YR 5/3) very stony silt loam, very dark grayish brown (10YR 3/2) moist; weak thin platy structure parting to weak coarse granular; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine, fine, and medium interstitial and tubular pores; 5 percent gravel, 15 percent cobbles, and 10 percent stones; slightly acid (pH 6.4); clear wavy boundary.

A2—3 to 8 inches; brown (10YR 5/3) very stony silt loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine, fine, and medium interstitial and tubular pores; 5 percent gravel, 15 percent cobbles, and 10 percent stones; slightly acid (pH 6.3); abrupt wavy boundary.

Bt—8 to 13 inches; yellowish brown (10YR 5/4) very stony clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium angular blocky structure; extremely hard, firm, very sticky and very plastic; common very fine, fine, and medium roots; many very fine, fine, and medium interstitial pores; many prominent clay films on faces of peds; 10 percent gravel, 25 percent cobbles, and 20 percent stones; neutral (pH 6.6); abrupt wavy boundary.

R—13 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Perla-Darrah-Ruckles complex, 1 to 4 percent slopes
Location in survey area: About 15 miles north and 3 miles west of Shoshone; about 2,300 feet south and 1,800 feet west of the northeast corner of sec. 20, T. 3 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Average annual soil temperature—47 to 50 degrees F

A horizon:
Chroma—2 or 3 dry or moist
Rock fragment content—10 to 15 percent gravel, 5 to 25 percent cobbles, and 10 to 20 percent stones
Reaction—neutral or slightly acid

Bt horizon:
Chroma—3 or 4 dry or moist
Clay content—40 to 60 percent
Texture—extremely cobbly clay or very stony clay
Rock fragment content—15 to 30 percent gravel, 15 to 30 percent cobbles, and 15 to 20 percent stones

Schnipper Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 1 to 8 percent
Elevation: 3,500 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Aridic Durixerolls

Typical Pedon

Ap—0 to 8 inches; brown (10YR 4/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine roots and few medium roots; many very fine, fine, and medium tubular and vesicular pores; neutral (pH 6.7); clear smooth boundary.

AB—8 to 12 inches; dark yellowish brown (10YR 4/4) fine sandy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine and few medium tubular pores; many distinct clay films on faces of peds and lining pores; neutral (pH 7.0); abrupt wavy boundary.

Bt—12 to 16 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; very hard, firm, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; many prominent clay films on faces of peds and lining pores; neutral (pH 7.3); clear smooth boundary.

Bk—16 to 24 inches; light gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; moderate thin platy structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); clear smooth boundary.

Bkq—24 to 29 inches; very pale brown (10YR 7/3) fine sandy loam, very pale brown (10YR 7/4) moist; massive; hard, firm, nonsticky and nonplastic; very few fine and fine roots; violently effervescent (about 25 percent calcium carbonate equivalent); disseminated lime and 25 percent very hard durinodes; moderately alkaline (pH 8.0); abrupt smooth boundary.

Bkqm1—29 to 47 inches; light yellowish brown (10YR 6/4) indurated caps 3 millimeters thick at a depth of 37 inches and 42 inches; weakly cemented material between laminae; massive; violently effervescent; abrupt smooth boundary.

Bkqm2—47 to 58 inches; very pale brown (10YR 8/3) indurated duripan; platy structure; violently effervescent; abrupt wavy boundary.

2R—58 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Harsan-Schnipper complex, 1 to 4 percent slopes
Location in survey area: About 2 miles west of Gooding; about 2,200 feet west and 700 feet north of the southeast corner of sec. 35, T. 5 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to duripan—20 to 40 inches
Depth to secondary lime—16 to 29 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—4 or 5 dry
Chroma—2 or 3 moist

Bt horizon:
Value—4 or 5 dry, 3 to 5 moist
Chroma—3 or 4 moist
Texture—clay loam or loam
Clay content—26 to 35 percent

Bk horizon:
Value—6 or 7 dry, 5 to 7 moist
Chroma—2 to 4 dry or moist
Texture—fine sandy loam, loam, or silt loam
Clay content—18 to 27 inches
Calcium carbonate equivalent—15 to 25 percent

Bkqm horizon:
Value—6 to 8 dry
Chroma—3 or 4 dry or moist
Thickness of laminar caps—2 to 5 millimeters

Schooler Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Slow
Landform: Basalt mesas and plateaus
Parent material: Loess over weathered loess
Slope range: 2 to 6 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Typic Durixerolls

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) extremely stony silty clay loam, very dark grayish brown (10YR 3/2) moist; weak thin and medium platy structure parting to moderate fine granular; slightly hard, friable, sticky and plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine interstitial and tubular pores; 10 percent gravel, 25 percent cobbles, 25 percent stones, and 1 percent boulders; slightly acid (pH 6.4); clear smooth boundary.

Bt1—2 to 5 inches; brown (10YR 5/3) very cobbly silty clay loam, dark brown (10YR 3/3) moist; moderate thin and medium platy structure; hard, friable, very sticky and very plastic; many very fine and fine roots and few medium and coarse roots; common very fine and fine interstitial and tubular pores; few faint clay films on faces of peds; 25 percent cobbles, 15 percent stones, and 1 percent boulders; neutral (pH 6.6); clear smooth boundary.

Bt2—5 to 14 inches; brown (10YR 5/3) very cobbly silty clay, dark brown (10YR 3/3) moist; strong medium prismatic structure; very hard, firm, very sticky and very plastic; common fine and very fine roots and few medium roots; few very fine and fine tubular pores; common prominent clay films on faces of peds; 10 percent gravel, 20 percent cobbles, and 15 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt3—14 to 22 inches; yellowish brown (10YR 5/4) very cobbly silty clay, dark brown (10YR 4/3) moist; strong medium angular blocky structure; extremely hard, very firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; common distinct clay films on faces of peds; 10 percent gravel, 20 percent cobbles, 10 percent stones, and 5 percent boulders; neutral (pH 7.0); clear wavy boundary.

Btq—22 to 26 inches; light reddish brown (5YR 6/4) very cobbly clay loam, dark reddish brown (5YR 3/3) moist; strong medium prismatic structure parting to strong medium angular blocky; extremely hard, very firm, sticky and plastic; few faint clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 10 percent stones; coatings of silica 1 millimeter to 5 millimeters thick on underside of rock fragments; neutral (pH 6.8); clear irregular boundary.

Bqm—26 to 28 inches; very pale brown (10YR 7/3) cemented duripan, brown (10YR 5/3) moist; moderate fine and medium subangular blocky structure in upper 1 inch and massive below; very hard, very firm; upper part is weakly cemented with silica and lower part is laminar cap 1 millimeter to 5 millimeters thick on top of bedrock; coatings of silica on rock fragments; 30 percent cobbles and 10 percent stones; abrupt wavy boundary.

2R—28 inches; basalt.

Typical Pedon Location

Map unit in which located: Schooler-Duguesclin-Willho complex, 2 to 6 percent slopes
Location in survey area: About 16 miles northwest of Bliss; 800 feet east and 1,000 feet south of the northwest corner of sec. 21, T. 3 S., R. 12 E.

Range in Characteristics

Profile:
Depth to bedrock—21 to 40 inches
Depth to duripan—20 to 38 inches
Thickness of mollic epipedon—7 to 20 inches
Clay content in particle-size control section—35 to 50 percent
Average annual soil temperature—45 to 46 degrees F

A horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—5 to 20 percent gravel, 20 to 40 percent cobbles, 10 to 25 percent stones, and 0 to 5 percent boulders

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist
Rock fragment content—10 to 20 percent gravel, 20 to 30 percent cobbles, 5 to 15 percent stones, and 0 to 5 percent boulders
Texture—very cobbly silty clay loam, extremely cobbly silty clay, or very cobbly silty clay

Btq horizon:
Hue—10YR to 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Clay content—35 to 50 percent
Rock fragment content—20 to 25 percent gravel, 10 to 20 percent cobbles, and 5 to 10 percent stones
Texture—very cobbly clay loam or very cobbly clay

Sidlake Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 1 to 25 percent
Elevation: 3,200 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Haplargids

Typical Pedon

A1—0 to 3 inches; grayish brown (10YR 5/2) fine sandy loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine interstitial pores; neutral (pH 7.2); clear wavy boundary.
A2—3 to 8 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine tubular pores; neutral (pH 7.2); clear smooth boundary.
Bt1—8 to 18 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; few faint clay films bridging sand grains; 5 percent gravel; mildly alkaline (pH 7.4); gradual wavy boundary.
Bt2—18 to 24 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular pores; common faint clay films bridging sand grains; 5 percent gravel; mildly alkaline (pH 7.6); abrupt wavy boundary.
2R—24 inches; basalt; coatings of lime and silica on sides of vertical fractures.

Typical Pedon Location

Map unit in which located: Starbuck-Sidlake-Rock outcrop complex, 2 to 15 percent slopes
Location in survey area: About 14 miles east of Dietrich; about 2,280 feet south and 1,300 feet west of the northeast corner of sec. 6, T. 6 S., R. 21 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Rock fragment content—0 to 10 percent

Bt horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Rock fragment content—0 to 10 percent
Clay content—20 to 29 percent
Texture—loam, sandy clay loam, or clay loam

Simonton Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills
Parent material: Colluvium and alluvium derived from welded tuff and rhyolite
Slope range: 0 to 30 percent
Elevation: 5,000 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 41 to 45 degrees F
Frost-free period: 60 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Ultic Argixerolls

Typical Pedon

A1—0 to 2 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; weak thin platy structure parting to moderate fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular and interstitial pores; moderately acid (pH 5.6); clear smooth boundary.

A2—2 to 8 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine and fine tubular pores; strongly acid (pH 5.3); clear wavy boundary.

BA—8 to 14 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine tubular pores; strongly acid (pH 5.3); clear wavy boundary.

Bt1—14 to 22 inches; yellowish brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; 5 percent gravel; strongly acid (pH 5.2); gradual wavy boundary.

Bt2—22 to 31 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots and common medium roots; common very fine and fine tubular pores; few distinct clay films on faces of peds and lining pores; 5 percent gravel; strongly acid (pH 5.3); clear wavy boundary.

Bt3—31 to 42 inches; light brown (7.5YR 6/4) clay loam, brown (7.5YR 5/4) moist; strong medium and coarse subangular blocky structure; very hard, friable, sticky and plastic; few very fine and fine roots; common very fine, fine, and medium tubular and interstitial pores; few patchy distinct clay films on faces of peds and lining pores; 10 percent gravel; strongly acid (pH 5.3); gradual wavy boundary.

BC—42 to 60 inches; pink (7.5YR 7/4) loam, brown (7.5YR 4/4) moist; strong medium and coarse subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine, fine, and medium tubular and interstitial pores; 10 percent gravel; strongly acid (pH 5.2).

Typical Pedon Location

Map unit in which located: Elkcreek-Mulshoe-Simonton complex, 1 to 12 percent slopes

Location in survey area: About 17 miles north and 6 miles east of Gooding; 1,100 feet west and 800 feet north of the center of sec. 10, T. 3 S., R. 16 E.

Range in Characteristics

Profile:

Thickness of mollic epipedon—10 to 16 inches

Base saturation—50 to 75 percent in upper 30 inches

Clay content in particle-size control section—26 to 32 percent

Sand (coarser than very fine sand) content in particle-size control section—more than 30 percent

Average annual soil temperature—43 to 46 degrees F

A and BA horizons:

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Rock fragment content—0 to 15 percent gravel

Reaction—moderately acid or strongly acid

Bt horizon:

Hue—5YR to 10YR

Value—4 to 7 dry, 3 to 5 moist

Chroma—3 to 5 dry or moist

Texture—loam, clay loam, or sandy clay loam

Clay content—26 to 32 percent

Rock fragment content—0 to 20 percent gravel

Reaction—moderately acid or strongly acid

BC horizon:

Texture—stratified loamy coarse sand to gravelly loam

Reaction—neutral to strongly acid

Skelter Series

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Foothills

Parent material: Colluvium and residuum derived from old alluvium and volcanic rock

Slope range: 20 to 60 percent

Elevation: 5,000 to 5,800 feet

Average annual precipitation: 13 to 16 inches

Average annual air temperature: 43 to 45 degrees F

Frost-free period: 70 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Ultic Argixerolls

Typical Pedon

A—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2); weak fine and very fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine tubular pores and common very fine and fine irregular pores; 15 percent gravel and 10 percent cobbles; slightly acid (pH 6.3); clear wavy boundary.

A2—2 to 10 inches; dark grayish brown (10YR 4/2) gravelly loam, dark grayish brown (10YR 3/2) moist, weak fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine tubular and interstitial pores; about 15 percent gravel and 10 percent cobbles; slightly acid (pH 6.2); gradual wavy boundary.

Bt1—10 to 14 inches; grayish brown (10YR 5/2) sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to very fine and fine granular structure; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; many very fine and fine pores; 5 percent gravel and 5 percent cobbles; discontinuous faint clay films on faces of peds; slightly acid (pH 6.2); clear wavy boundary.

Bt2—14 to 27 inches; brown (10YR 5/3) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, very firm, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few very fine tubular pores; 5 percent gravel and 5 percent cobbles; discontinuous faint clay films on faces of peds; neutral (pH 6.8); clear wavy boundary.

Btq—27 to 38 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine tubular and irregular pores; few faint clay films bridging sand grains; 5 percent gravel; 5 percent gravel-sized pieces of broken silica caps; slightly acid (pH 6.5); clear wavy boundary.

2BC—38 to 60 inches; light yellowish brown (10YR 7/4) stratified sandy loam to extremely gravelly fine sandy loam, yellowish brown (10YR 5/4) moist; weak fine and medium subangular blocky structure; very hard, firm, nonsticky and nonplastic; common very fine tubular and irregular pores; 80 percent gravel; extremely acid (pH 4.3).

Typical Pedon Location

Map unit in which located: Skelter-Stash complex, 20 to 50 percent slopes

Location in survey area: About 15 miles north of Gooding, about 600 feet east and 1,200 feet south of the northwest corner of sec. 9, T. 3 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—more than 60 inches
Depth to stratified sand and gravel—20 to 40 inches
Average annual soil temperature—45 to 47 degrees F
Coarse fragment content—5 to 80 percent gravel
Thickness of mollic epipedon—10 to 20 inches

A horizon:
Value—3 or 4 dry
Coarse fragment content—10 to 25 percent gravel and 5 to 10 percent cobbles
Reaction—slightly acid or neutral

Bt horizon:
Clay content—25 to 35 percent
Coarse fragment content—5 to 15 percent gravel and 0 to 5 percent cobbles
Texture—gravelly clay loam, clay loam, or sandy clay loam
Reaction—slightly acid or neutral

Btq horizon:
Coarse fragment content—0 to 15 percent
Texture—clay loam or sandy clay loam
Clay content—25 to 35 percent
Reaction—slightly acid or neutral

2BC horizon:
Coarse fragment content—10 to 80 percent gravel
Texture—stratified extremely gravelly fine sandy loam to sandy loam
Reaction—extremely acid or strongly acid

Snowmore Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes

Parent material: Eolian deposits reworked by water
Slope range: 0 to 20 percent
Elevation: 3,400 to 4,600 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Typical Pedon

A1—0 to 2 inches; brown (10YR 4/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine interstitial pores; 5 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

A2—2 to 5 inches; dark yellowish brown (10YR 4/4) fine sandy loam, dark brown (10YR 3/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and fine interstitial pores; 5 percent gravel; neutral (pH 7.3); clear wavy boundary.

BA—5 to 7 inches; yellowish brown (10YR 5/4) fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; common very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

Bt1—7 to 12 inches; yellowish brown (10YR 5/4) sandy clay loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and bridging sand grains; 10 percent gravel; mildly alkaline (pH 7.5); gradual wavy boundary.

Bt2—12 to 16 inches; yellowish brown (10YR 5/4) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure; very hard, firm, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds; 10 percent gravel; mildly alkaline (pH 7.5); abrupt wavy boundary.

Bk—16 to 19 inches; light yellowish brown (10YR 6/4) sandy clay loam, brown (10YR 5/3) moist; moderate fine subangular blocky structure; very hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; 5 percent gravel and 5 percent weakly cemented and fractured duripan fragments 1.0 centimeter to 2.5 centimeters in diameter; strongly effervescent (about 15 percent calcium carbonate equivalent); nearly continuous very pale brown (10YR 8/3) coatings of soft lime on faces of peds and lining pores; moderately alkaline (pH 8.2); clear wavy boundary.

Bkq—19 to 24 inches; white (10YR 8/2) gravelly sandy loam, light yellowish brown (10YR 6/4) moist; massive; extremely hard, very firm, nonsticky and nonplastic; common very fine and fine roots between fractured duripan fragments; about 30 percent weakly cemented and fractured, displaced duripan fragments 2 to 7 centimeters in length; violently effervescent (about 15 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkqm—24 to 28 inches; white (10YR 8/2) indurated duripan, light gray (10YR 7/2) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; few very fine and fine roots matted along horizontal surface of duripan; strongly cemented plates with continuous laminar caps 1 millimeter to 6 millimeters thick; continuous silica and lime cementation between plates; violently effervescent; abrupt wavy boundary.

R—28 inches; lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Kecko-Snowmore complex, 2 to 20 percent slopes
Location in survey area: About 1.25 miles south and 15 miles east of Dietrich; about 450 feet east and 1,250 feet south of the northwest corner of sec. 29, T. 6 S., R. 20 E.

Range in Characteristics

Profile:
Depth to bedrock—21 to 40 inches
Depth to duripan—20 to 34 inches
Rock fragment content—0 to 15 percent
Clay content in particle-size control section—20 to 35 percent
Average annual soil temperature—50 to 52 degrees F
Reaction—neutral to moderately alkaline

A horizon:
Chroma—2 or 3 dry or moist

Bt horizon:
Value—5 or 6 dry
Chroma—2 to 4 dry or moist
Texture—loam, clay loam, or sandy clay loam

Bk and Bkq horizons:
Value—6 to 8 dry, 4 to 6 moist

Texture—loam, gravelly loam, gravelly clay loam, or gravelly sandy clay loam
Clay content—25 to 35 percent
Rock fragment content—0 to 25 percent

Bkqm horizon:
Value—7 or 8 dry, 4 to 7 moist
Chroma—2 or 3 dry or moist

Splittop Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits reworked by water, and residuum derived from basalt
Slope range: 2 to 8 percent
Elevation: 4,600 to 5,400 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine-loamy, mixed, frigid Xerollic Camborthids

Typical Pedon

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist, weak thick platy structure; soft, very friable, nonsticky and nonplastic; many very fine roots; few very fine interstitial pores; 5 percent cobbles; mildly alkaline (pH 7.4); abrupt smooth boundary.

Bw1—3 to 10 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and nonplastic; common very fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.8); gradual smooth boundary.

Bw2—10 to 15 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.6); abrupt smooth boundary.

Bk1—15 to 26 inches; very pale brown (10YR 8/3) silt loam, very pale brown (10YR 7/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; strongly effervescent (about 20 percent calcium carbonate equivalent); moderately alkaline (pH 8.4); abrupt wavy boundary.

Bk2—26 to 32 inches; very pale brown (10YR 7/3) very cobbly loam, pale brown (10YR 6/3) moist; massive; slightly hard, firm, nonsticky and nonplastic; few very fine roots; few very fine tubular pores; 50 percent cobbles; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—32 inches; unfractured basalt.

Typical Pedon Location

Map unit in which located: Splittop-Atomic complex, 2 to 8 percent slopes
Location in survey area: About 4 miles south and 5 miles east of Antelope Lake; about 2,000 feet north and 1,000 feet east of the southwest corner of sec. 2, T. 3 S., R. 29 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Depth to secondary lime—10 to 20 inches
Average annual soil temperature—45 to 46 degrees F

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam or silt loam
Clay content—20 to 27 percent

Bk1 horizon:
Value—7 or 8 dry, 6 or 7 moist
Chroma—1 to 3 dry or moist
Texture—loam or silt loam

Bk2 horizon:
Rock fragment content—15 to 55 percent

Springcove Series

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Stream terraces
Parent material: Alluvium derived from lacustrine sediment
Slope range: 0 to 2 percent
Elevation: 3,000 to 3,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Typic Natrixeralfs

Typical Pedon

Anz1—0 to 1 inch; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin, medium, and thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few very fine roots; common very fine and few fine interstitial pores and few fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 10.6); electrical conductivity of 16.1 millimhos per centimeter; abrupt smooth boundary.

Anz2—1 inch to 5 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin and medium platy structure; hard, friable, slightly sticky and slightly plastic; common fine and medium roots and few very fine roots; many very fine and few fine interstitial pores and few very fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.5); electrical conductivity of 37.7 millimhos per centimeter; abrupt smooth boundary.

Btnz1—5 to 11 inches; gray (10YR 5/1) silty clay, black (10YR 2/1) moist; moderate very fine, fine, and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common fine and very fine interstitial pores and few very fine tubular pores; few faint clay films on faces of peds and lining pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 9.5); electrical conductivity of 12.9 millimhos per centimeter; clear smooth boundary.

Btnz2—11 to 22 inches; gray (10YR 5/1) silty clay, very dark grayish brown (10YR 3/2) moist; strong very fine, fine, and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots and few medium roots; common very fine and fine tubular pores and common very fine interstitial pores; few faint clay films on faces of peds and lining pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 10.5); about 5 percent salt crystals; electrical conductivity of 4 millimhos per centimeter; clear wavy boundary.

Btnz3—22 to 32 inches; grayish brown (10YR 5/2) silty clay, very dark grayish brown (10YR 3/2) moist; strong very fine, fine, and medium prismatic structure; very hard, firm, sticky and plastic; common fine and very fine roots and few medium roots; common very fine and few fine tubular pores; few faint clay films on faces of peds and lining pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; very strongly alkaline (pH 10.2); 5 percent salt crystals; electrical conductivity of 5.8 millimhos per centimeter; gradual smooth boundary.

Bn1—32 to 38 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; thin (less than 1 inch thick) lenses of coarse sand; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and few fine and medium tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); very strongly alkaline (pH 9.6); electrical conductivity of 3.2 millimhos per centimeter; clear wavy boundary.

Bn2—38 to 45 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine and medium tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); very strongly alkaline (pH 9.4); electrical conductivity of 2.6 millimhos per centimeter; clear wavy boundary.

Bn3—45 to 60 inches; light brownish gray (10YR 6/2) silt loam, dark brown (10YR 3/3) moist; moderate very fine, fine, and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and few fine and medium tubular pores; few manganese stains; slightly effervescent (about 5 percent calcium carbonate equivalent); very strongly alkaline (pH 9.3); electrical conductivity of 3.1 millimhos per centimeter.

Typical Pedon Location

Map unit in which located: Springcove-Jansite complex, 0 to 2 percent slopes

Location in survey area: Along Clover Creek; 1,280 feet west and 800 feet north of the southeast corner of sec. 3, T. 5 S., R. 12 E.

Range in Characteristics

Profile:
Reaction—strongly alkaline or very strongly alkaline
Average annual soil temperature—50 to 53 degrees F

Anz horizon:
Value—6 or 7 dry, 2 to 4 moist
Chroma—1 or 2 dry or moist
Electrical conductivity—16 to 38 millimhos per centimeter
Sodium adsorption ratio—210 to 300
Calcium carbonate equivalent—0 to 5 percent

Btnz horizon:
Value—4 or 5 dry, 2 to 4 moist
Chroma—1 or 2 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 50 percent
Rock fragment content—0 to 5 percent
Electrical conductivity—5 to 13 millimhos per centimeter
Calcium carbonate equivalent—0 to 5 percent
Sodium adsorption ratio—160 to 200

Bn horizon:
Value—5 to 7 dry, 2 to 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, fine sandy loam, or silty clay loam
Rock fragment content—0 to 5 percent
Calcium carbonate equivalent—0 to 5 percent
Electrical conductivity—2 to 4 millimhos per centimeter
Sodium adsorption ratio—160 to 200

Starbuck Series

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits
Slope range: 1 to 20 percent
Elevation: 2,900 to 4,700 feet
Average annual precipitation: 8 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Loamy, mixed, mesic Lithic Xerollic Camborthids

Typical Pedon

A1—0 to 1 inch; brown (10YR 5/3) very fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak very fine and fine granular structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine roots; many very fine and common fine interstitial pores; trace of gravel; neutral (pH 6.6); abrupt smooth boundary.

A2—1 inch to 4 inches; yellowish brown (10YR 5/4) very fine sandy loam, dark yellowish brown (10YR 3/4) moist; moderate thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots; many very fine interstitial pores; trace of gravel; neutral (pH 7.0); abrupt smooth boundary.

Bw1—4 to 10 inches; yellowish brown (10YR 5/4) very fine sandy loam, dark brown (10YR 3/3) moist; weak very fine, fine, and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores and few very fine tubular pores; trace of gravel; neutral (pH 6.9); clear wavy boundary.

Bw2—10 to 17 inches; light yellowish brown (10YR 6/4) very fine sandy loam, dark brown (10YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine interstitial pores and few very fine tubular pores; trace of gravel; mildly alkaline (pH 7.4); abrupt wavy boundary.

2R—17 inches; basalt with few thin coatings of lime.

Typical Pedon Location

Map unit in which located: Vining-Kecko-Starbuck complex, 2 to 12 percent slopes

Location in survey area: About 5 miles west and 3/4 mile north of Wendell; about 850 feet west and 800 feet north of the southeast corner of sec. 28, T. 7 S., R. 14 E.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, very fine sandy loam, fine sandy loam, or loam
Rock fragment content—0 to 5 percent gravel
Clay content—14 to 18 percent

Starhope Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Basalt plains and foothills
Parent material: Loess, and residuum derived from basalt
Slope range: 1 to 12 percent
Elevation: 5,000 to 5,900 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine, montmorillonitic, frigid Ultic Argixerolls

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine vesicular and tubular pores; strongly acid (pH 5.4); abrupt smooth boundary.

A2—2 to 9 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; strongly acid (pH 5.5); clear wavy boundary.

Bt—9 to 17 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds and lining pores; many bleached silt grains on faces of peds; moderately acid (pH 6.0); clear wavy boundary.

Btb—17 to 25 inches; brown (7.5YR 5/4) silty clay, dark brown (7.5YR 4/4) moist; moderate fine prismatic structure parting to strong very fine and fine angular blocky; very hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular pores; few distinct clay films on faces of peds and lining pores; moderately acid (pH 5.9); abrupt irregular boundary.

R—25 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Starhope-Polecreek-Mug complex, 1 to 12 percent slopes

Location in survey area: About 18 miles north and 3 miles west of Shoshone; 1,400 feet south and 1,200 feet east of the northwest corner of sec. 5, T. 3 S., R. 17 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—7 to 12 inches
Base saturation—50 to 75 percent in the upper 30 inches
Average annual soil temperature—45 to 46 degrees F

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Rock fragment content—0 to 10 percent gravel
Reaction—strongly acid to slightly acid

Bt and Btb horizons:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 60 percent
Rock fragment content—0 to 15 percent
Reaction—strongly acid to slightly acid

Stash Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Canyonsides and foothills
Parent material: Colluvium derived from loess and basalt
Slope range: 20 to 30 percent
Elevation: 5,000 to 5,800 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Clayey-skeletal, montmorillonitic, frigid Ultic Argixerolls

Typical Pedon

A—0 to 11 inches; dark grayish brown (10YR 4/2) extremely stony clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure parting to strong fine and very fine subangular blocky; slightly hard, friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; many fine and coarse interstitial and tubular pores; 25 percent gravel, 30 percent cobbles, and

10 percent stones; moderately acid (pH 6.0); clear wavy boundary.

Bt1—11 to 17 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (7.5YR 4/4) moist; strong fine and medium prismatic structure; extremely hard, extremely firm, very sticky and very plastic; many very fine and fine roots and few medium and coarse roots; many fine and coarse interstitial pores; few faint clay films on faces of peds; 15 percent gravel, 20 percent cobbles, and 5 percent stones; 2 percent fine manganese concretions; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—17 to 41 inches; yellowish brown (10YR 5/4) very cobbly clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse prismatic structure; extremely hard, extremely firm, very sticky and very plastic; common very fine and fine roots; many fine and coarse interstitial pores; few faint clay films on faces of peds; 20 percent gravel, 20 percent cobbles, and 5 percent stones; 2 percent fine manganese concentrations; neutral (pH 6.7); clear wavy boundary.

Bq1—41 to 48 inches; light yellowish brown (10YR 6/4) very cobbly loam, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; weakly cemented; 2 percent fine manganese concretions; 15 percent gravel, 25 percent cobbles, and 3 percent stones; neutral (pH 6.8); clear wavy boundary.

Bq2—48 to 62 inches; light yellowish brown (10YR 6/4) very cobbly loam, yellowish brown (10YR 5/4) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; strongly cemented; 2 percent manganese concretions; 15 percent gravel, 20 percent cobbles, and 5 percent stones; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Moreglade-Molyneux-Stash complex, 20 to 50 percent slopes

Location in survey area: About 15 miles north of Bliss; 500 feet north and 2,400 feet west of the southeast corner of sec. 11, T. 3 S., R. 12 E.

Range in Characteristics

Profile:

Base saturation in upper 30 inches—50 to 75 percent

Rock fragment content in particle-size control section—35 to 50 percent

Average annual soil temperature—45 to 46 degrees F

Reaction—moderately acid to neutral

A horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Rock fragment content—5 to 25 percent gravel, 5 to 30 percent cobbles, and 5 to 10 percent stones

Bt horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Texture—very cobbly clay, very gravelly clay loam, or very cobbly clay loam

Clay content—32 to 50 percent

Rock fragment content—15 to 25 percent gravel, 15 to 20 percent cobbles, and 5 to 10 percent stones

Taunton Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Permeability: Moderate

Landform: Basalt plains and buttes

Parent material: Eolian deposits reworked by water

Slope range: 0 to 15 percent

Elevation: 2,900 to 4,700 feet

Average annual precipitation: 9 to 11 inches

Average annual air temperature: 48 to 51 degrees F

Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Durorthids

Typical Pedon

Ap1—0 to 4 inches; brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; strong medium platy structure parting to moderate fine and medium subangular blocky; hard, very friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; few very fine and fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

Ap2—4 to 9 inches; brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine and fine tubular pores; slightly effervescent (about 5 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.4); clear wavy boundary.

Bw—9 to 18 inches; pale brown (10YR 6/3) very fine sandy loam, yellowish brown (10YR 5/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; mildly alkaline (pH 7.6); clear smooth boundary.

Bk—18 to 25 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; strong fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); gradual wavy boundary.

Bkq—25 to 33 inches; very pale brown (10YR 8/3) sandy loam, very pale brown (10YR 7/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); clear broken boundary.

Bkqm1—33 to 41 inches; very pale brown (10YR 7/4) indurated duripan; violently effervescent; abrupt wavy boundary.

2Bkq1—41 to 59 inches; light brownish gray (10YR 6/2) loamy fine sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; 5 percent gravel; strongly effervescent (about 25 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); clear smooth boundary.

2Bkq2—59 to 67 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine tubular pores; 5 percent gravel; violently effervescent (about 35 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.2).

Typical Pedon Location

Map unit in which located: Ticeska-Taunton-Minveno complex, 1 to 3 percent slopes

Location in survey area: About 0.5 mile south and 1.0 mile east of Wendell; about 2,350 feet north and 1,400 feet west of the southeast corner of sec. 3, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches or more
Depth to duripan—22 to 38 inches
Depth to secondary lime—10 to 17 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral to moderately alkaline

Ap horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry

Bw and Bk horizons:
Value—5 to 7 dry, 4 to 7 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam or loam

Bkq horizon:
Value—6 to 8 dry, 4 to 7 moist
Chroma—2 or 3 dry, 2 to 4 moist
Texture—sandy loam, fine sandy loam, silt loam, loam, or very fine sandy loam

Bkqm horizon:
Value—6 to 8 dry, 3 to 8 moist
Chroma—2 to 4 dry, 2 to 5 moist
Thickness of laminar caps—0.5 millimeter to 3.0 millimeters
Distance between caps—0.5 inch to 2.0 inches

2Bkq horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Texture—loamy fine sand or sandy loam

Terracecreek Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Foothills and canyonsides
Parent material: Colluvium and residuum derived from welded tuff and rhyolite
Slope range: 2 to 65 percent
Elevation: 4,700 to 6,200 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Loamy-skeletal, mixed, frigid Ultic Haploxerolls

Typical Pedon

A—0 to 4 inches; grayish brown (10YR 5/2) very channery loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine and medium irregular pores; 35 percent gravel and 15 percent channers; neutral (pH 6.6); clear wavy boundary.

BA—4 to 10 inches; yellowish brown (10YR 5/4) very channery loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and slightly plastic; many very fine, common fine, and few medium roots; many very fine and few fine and medium irregular pores; 20 percent gravel, 30 percent channers, and 5 percent flagstones; slightly acid (pH 6.4); clear wavy boundary.

Bw—10 to 24 inches; light yellowish brown (10YR 6/4) extremely channery loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine roots and common fine and medium roots matted between rock fragments; common very fine and few fine and medium irregular pores; 30 percent gravel, 30 percent channers, and 15 percent flagstones; slightly acid (pH 6.4); abrupt wavy boundary.

R—24 inches; highly fractured welded tuff.

Typical Pedon Location

Map unit in which located: Fergie-Terracecreek-Gaibson complex, 2 to 25 percent slopes

Location in survey area: About 2,600 feet north and 1,220 feet east of the southwest corner of sec. 6, T. 3 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Thickness of mollic epipedon—10 to 15 inches
Base saturation in upper 30 inches—50 to 75 percent
Average annual soil temperature—45 to 46 degrees F
Reaction—slightly acid or neutral

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Rock fragment content—25 to 35 percent gravel and 10 to 25 percent channers

BA horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly loam or very channery loam
Rock fragment content—15 to 20 percent gravel, 20 to 35 percent channers, and 0 to 5 percent flagstones
Clay content—20 to 27 percent

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly loam, very channery loam, or extremely channery loam
Rock fragment content—15 to 30 percent gravel, 20 to 40 percent channers, and 0 to 15 percent flagstones
Clay content—20 to 27 percent

Thorncreek Series

Depth class: Deep
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plateaus and mesas
Parent material: Weathered loess
Slope range: 1 to 6 percent
Elevation: 3,600 to 4,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine, montmorillonitic, mesic Chromic Haploxererts

Typical Pedon

A1—0 to 3 inches; dark grayish brown (10YR 4/2) extremely cobbly silty clay loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to weak fine granular; slightly hard, very friable, very sticky and very plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores and few very fine and fine interstitial pores; 5 percent gravel, 60 percent cobbles, and 15 percent stones; common cracks 1 centimeter wide; neutral (pH 6.6); clear smooth boundary.

A2—3 to 8 inches; dark brown (7.5YR 4/2) silty clay loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores and few very fine and fine interstitial pores; few faint distinct pressure faces on faces of peds; few cracks 1 centimeter wide; neutral (pH 6.8); abrupt smooth boundary.

Bss1—8 to 17 inches; dark brown (7.5YR 4/2) silty clay, dark brown (10YR 4/3) moist; massive; hard, firm, very sticky and very plastic; few very fine and fine roots; few very fine and fine tubular and interstitial pores; few intersecting slickensides and few distinct pressure faces; few cracks 1 centimeter wide; neutral (pH 7.0); clear smooth boundary.

Bss2—17 to 29 inches; dark brown (7.5YR 4/2) silty clay, dark yellowish brown (10YR 4/4) moist; massive; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine and fine tubular and interstitial pores; common intersecting slickensides and pressure faces; few cracks 1 centimeter wide; 10 percent cobbles; neutral (pH 7.1); clear wavy boundary.

Bss3—29 to 37 inches; light brown (7.5YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots on faces of peds; common very fine and fine tubular pores; intersecting slickensides and pressure faces; few cracks 1 centimeter wide; mildly alkaline (pH 7.4); gradual wavy boundary.

Bq—37 to 41 inches; pink (7.5YR 7/4) very cobbly loam, dark grayish brown (10YR 4/4) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; 10 percent gravel, 20 percent cobbles, and 10 percent stones; few areas are slightly effervescent; silica cementation 1 millimeter thick on underside of rock fragments; mildly alkaline (pH 7.4); abrupt broken boundary.

2R—41 inches; slightly weathered basalt with weathered, discontinuous coating of silica filling some fractures and cementing some of the more stable bedrock.

Typical Pedon Location

Map unit in which located: McHandy-Thorncreek complex, 1 to 6 percent slopes

Location in survey area: About 10 miles north and 3 miles west of Bliss; about 1,900 feet north and 200 feet east of the southwest corner of sec. 15, T. 4 S., R. 12 E.

Range in Characteristics

Profile:

Depth to bedrock—40 to 60 inches

Clay content in particle-size control section—40 to 52 percent

Amount of intersecting slickensides—few to common in Bss horizon

Presence of cracks—open July through October and closed in winter; 0.5 centimeter to 3 centimeters wide at a depth of 14 to 25 inches and extending upwards to the surface

Average annual soil temperature—50 to 53 degrees F

Reaction—neutral or mildly alkaline

The A2 horizon is absent in some pedons.

A1 horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Rock fragment content—5 to 10 percent gravel, 45 to 60 percent cobbles, and 5 to 15 percent stones

A2 horizon:

Value—4 or 5 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Rock fragment content—0 to 10 percent gravel, 0 to 5 percent cobbles, and 0 to 5 percent stones

Bss horizon:

Hue—10YR or 7.5YR

Value—4 to 7 dry, 3 to 6 moist

Chroma—3 to 6 dry or moist

Texture—silty clay or clay

Clay content—30 to 60 percent

Calcium carbonate equivalent—0 to 5 percent

Rock fragment content—0 to 15 percent gravel and 0 to 5 percent cobbles

Bq horizon:

Value—6 to 8 dry, 4 to 6 moist

Chroma—4 or 5 dry or moist

Texture—very cobbly loam, very cobbly clay loam, loam, or clay loam

Clay content—25 to 35 percent

Rock fragment content—5 to 15 percent gravel, 5 to 25 percent cobbles, and 0 to 10 percent stones and boulders

Ticeska Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Permeability: Moderate

Landform: Basalt plains and buttes

Parent material: Eolian deposits reworked by water

Slope range: 1 to 12 percent

Elevation: 3,200 to 3,600 feet

Average annual precipitation: 9 to 11 inches

Average annual air temperature: 48 to 51 degrees F

Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Durorthids

Typical Pedon Description

Ap1—0 to 6 inches; pale brown (10YR 6/3) very fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; few very fine, fine, and medium interstitial pores; 5 percent gravel; slightly effervescent (about 5 percent calcium carbonate); disseminated lime; moderately alkaline (pH 8.1); clear wavy boundary.

Ap2—6 to 13 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak very fine, fine, and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; common very fine and fine tubular pores; 5 percent gravel; strongly effervescent (about 5 percent calcium carbonate); disseminated lime; moderately alkaline (pH 8.3); gradual wavy boundary.

Bk1—13 to 17 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; massive; hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; common very fine and fine interstitial and tubular pores; 5 percent gravel; violently effervescent (about 30 percent calcium carbonate); disseminated lime; moderately alkaline (pH 8.1); clear wavy boundary.

Bk2—17 to 21 inches; very pale brown (10YR 8/3) fine sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine, fine, and medium interstitial pores; 5 percent gravel; violently effervescent (about 30 percent calcium carbonate); moderately alkaline (pH 8.4); clear wavy boundary.

Bkq—21 to 26 inches; very pale brown (10YR 7/3) cobbly fine sandy loam, pale brown (10YR 6/3) moist; massive; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; 10 percent gravel, 20 percent cobbles, and 10 percent pebble-sized duripan fragments; violently effervescent (about 35 percent calcium carbonate); 1- to 2-millimeter-thick coatings of silica and lime on rock fragments; strongly alkaline (pH 8.5); abrupt wavy boundary.

Bkqm—26 to 39 inches; very pale brown (10YR 8/3) indurated duripan, light yellowish brown (10YR 6/4) moist; continuous lime- and silica-cemented laminar cap less than 3 millimeters thick; few very fine roots matted on top of laminar caps; laminar caps 1 inch to 3 inches apart; strongly cemented to indurated material between caps; laminar caps have fractures 5 to 20 inches apart in some areas; 20 percent cobbles and 10 percent gravel cemented in duripan; violently effervescent; abrupt wavy boundary.

2R—39 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Taunton-Ticeska very fine sandy loams, 1 to 4 percent slopes

Location in survey area: About 2.7 miles west of Wendell; about 670 feet west and 60 feet north of the southeast corner of sec. 36, T. 7 S., R. 14 E.

Range in Characteristics

Profile:

Depth to bedrock—23 to 40 inches
Depth to duripan—22 to 31 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:

Value—5 to 7 dry, 4 or 5 moist
Chroma—2 to 4 dry or moist

Bk horizon:

Value—6 to 8 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—silt loam, very fine sandy loam, or fine sandy loam
Clay content—13 to 18 percent
Rock fragment content—0 to 5 percent
Calcium carbonate equivalent—10 to 30 percent
Reaction—mildly alkaline to strongly alkaline

Bkq horizon:

Value—7 or 8 dry, 6 or 7 moist
Chroma—3 or 4 dry or moist
Texture—cobbly silt loam, cobbly loam, or cobbly fine sandy loam
Clay content—12 to 18 percent
Rock fragment content—5 to 10 percent gravel and 10 to 20 percent cobbles
Calcium carbonate equivalent—15 to 40 percent
Reaction—moderately alkaline or strongly alkaline

Bkqm horizon:

Thickness of laminar caps—1 millimeter to 3 millimeters
Thickness of duripan—1 inch to 15 inches
Cementation of material between caps—strongly cemented or indurated
Distance between caps—1 inch to 3 inches

Tschamman Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plateaus and mesas
Parent material: Weathered loess
Slope range: 2 to 8 percent
Elevation: 3,900 to 5,200 feet
Average annual precipitation: 11 to 13 inches
Average annual air temperature: 45 to 48 degrees F
Frost-free period: 90 to 100 days

Taxonomic class: Fine, montmorillonitic, mesic Chromic Durixererts

Typical Pedon

A—0 to 3 inches; brown (10YR 5/3) very stony silty clay loam, dark brown (10YR 3/3) moist; weak thin and medium platy structure parting to weak fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine tubular pores; 20 percent gravel, 20 percent cobbles, and 3 percent stones; cracks 1 centimeter wide; neutral (pH 7.0); abrupt broken boundary.

Bss1—3 to 14 inches; reddish brown (5YR 5/3) silty clay, dark reddish brown (5YR 3/3) moist; strong coarse prismatic structure parting to strong medium and coarse angular and subangular blocky; extremely hard, very firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots in cracks; few very fine and fine tubular pores; intersecting slickensides and pressure faces; 2 percent gravel; cracks 1 centimeter wide; neutral (pH 7.0); gradual wavy boundary.

Bss2—14 to 26 inches; reddish brown (5YR 5/3) silty clay, dark reddish brown (5YR 3/3) moist; strong coarse prismatic structure parting to strong medium and coarse angular and subangular blocky; extremely hard, very firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots in cracks; few very fine and fine tubular pores; intersecting slickensides and pressure faces; 2 percent gravel; cracks 1 centimeter wide; neutral (pH 7.0); clear wavy boundary.

Bss3—26 to 30 inches; yellowish red (5YR 5/6) clay, yellowish red (5YR 4/6) moist; strong fine and medium prismatic structure; very hard, firm, very sticky and very plastic; few very fine, fine, medium, and coarse roots in cracks and matted above duripan; few very fine and fine tubular pores; intersecting slickensides and pressure faces; 2 percent gravel; cracks 1 centimeter wide; neutral (pH 6.8); abrupt smooth boundary.

Bqm—30 to 43 inches; pink (7.5YR 7/4) indurated duripan, brown (7.5YR 4/6) moist; massive; 2 percent gravel, 10 percent cobbles, and 10 percent stones cemented in duripan; silica cap 1 millimeter thick underlain by strongly cemented material; abrupt broken boundary.

2R—43 inches; basalt.

Typical Pedon Location

Map unit in which located: Tschamman-Hobby-Bray complex, 2 to 8 percent slopes

Location in survey area: About 13 miles north of Bliss; 1,350 feet south and 250 feet east of the northwest corner of sec. 26, T. 3 S., R. 12 E.

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches
Depth to bedrock—40 to 60 inches
Thickness of duripan—1 inch to 15 inches
Clay content in particle-size control section—40 to 60 percent
Amount of intersecting slickensides—few to common in Bss horizon
Presence of cracks—open July through October and closed in winter
Average annual soil temperature—47 to 50 degrees F
Reaction—slightly acid or neutral

A Bkqm horizon and a Bq horizon are in some pedons.

A horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Rock fragment content—5 to 20 percent gravel, 5 to 40 percent cobbles, and 1 to 3 percent stones

Bss horizon:
Hue—5YR or 7.5YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—3 to 6 dry or moist
Texture—silty clay or clay
Clay content—40 to 60 percent
Rock fragment content—0 to 10 percent gravel and 0 to 5 percent cobbles

Bqm horizon:
Hue—10YR or 7.5YR

Value—5 to 8 dry or moist
Chroma—2 to 5 dry
Thickness of indurated silica caps—0.5 millimeter to 2.0 millimeters thick
Cementation between caps—weak to strong
Effervescence—noneffervescent or slightly effervescent
Calcium carbonate equivalent—0 to 5 percent

Tupper Series

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderately rapid
Landform: Stream terraces
Parent material: Alluvium
Slope range: 2 to 8 percent
Elevation: 2,700 to 3,000 feet
Average annual precipitation: 7 to 9 inches
Average annual air temperature: 50 to 52 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Loamy-skeletal, mixed, mesic Durixerollic Camborthids

Typical Pedon

A—0 to 7 inches; brown (10YR 5/3) extremely bouldery fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; common fine and medium roots; many very fine interstitial pores; 10 percent gravel, 10 percent cobbles, 10 percent stones, and 35 percent boulders; neutral (pH 7.0); clear smooth boundary.

Bw1—7 to 18 inches; yellowish brown (10YR 5/4) very bouldery fine sandy loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine tubular pores; 10 percent gravel, 10 percent cobbles, 10 percent stones, and 15 percent boulders; neutral (pH 7.0); clear wavy boundary.

Bw2—18 to 30 inches; light yellowish brown (10YR 6/4) very bouldery fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common very fine and few fine tubular pores; 10 percent gravel, 10 percent cobbles, 10 percent stones, and 20 percent boulders; neutral (pH 7.2); clear wavy boundary.

Bkq1—30 to 43 inches; yellowish brown (10YR 5/4) extremely bouldery fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; common very fine and few fine tubular pores; 15 percent gravel, 15 percent cobbles, 15 percent stones, and 30 percent boulders; strongly effervescent (about 15 percent calcium carbonate equivalent); 1- to 5-millimeter-thick coatings of lime and silica on bottom of rock fragments and in planes bridging rock fragments; weakly cemented lenses that are brittle when dry and firm when moist; mildly alkaline (pH 7.4); clear wavy boundary.

Bkq2—43 to 66 inches; yellowish brown (10YR 5/4) extremely bouldery loamy fine sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; many very fine and few fine interstitial pores; 10 percent gravel, 15 percent cobbles, 15 percent stones, and 30 percent boulders; violently effervescent (about 25 percent calcium carbonate equivalent); many soft masses and fine veins of lime; 1- to 5-millimeter-thick coatings of lime and silica on bottom of rock fragments and bridging rock fragments; weakly cemented lenses that are brittle when dry and firm when moist; moderately alkaline (pH 7.6).

Typical Pedon Location

Map unit in which located: Tupper extremely bouldery fine sandy loam, 2 to 8 percent slopes
Location in survey area: About 3 miles south of Hagerman; 75 feet south and 75 feet west of the northeast corner of sec. 2, T. 8 S., R. 13 E.

Range in Characteristics

Profile:
Depth to carbonates—20 to 36 inches
Depth to stratified sand and rock fragments—27 to 41 inches
Average annual soil temperature—52 to 54 degrees F

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very bouldery fine sandy loam or very bouldery sandy loam
Rock fragment content—5 to 10 percent gravel,

5 to 10 percent cobbles, 10 to 15 percent stones, and 15 to 20 percent boulders
Clay content—12 to 20 percent
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—5 to 7 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—stratified very bouldery fine sandy loam or extremely bouldery loamy sand
Rock fragment content—10 to 15 percent gravel, 10 to 15 percent cobbles, 10 to 15 percent stones, and 20 to 35 percent boulders
Calcium carbonate equivalent—15 to 25 percent
Reaction—moderately alkaline or strongly alkaline

Tusel Series

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Foothills
Parent material: Colluvium and residuum derived from welded tuff, rhyolite, and basalt
Slope range: 25 to 60 percent
Elevation: 5,800 to 6,200 feet
Average annual precipitation: 16 to 20 inches
Average annual air temperature: 39 to 41 degrees F
Frost-free period: 30 to 60 days

Taxonomic class: Loamy-skeletal, mixed Argic Pachic Cryoborolls

Typical Pedon

A1—0 to 2 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine interstitial and tubular pores; 20 percent gravel; neutral (pH 6.8); clear smooth boundary.
A2—2 to 7 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots, many very fine and fine interstitial and tubular pores; 20 percent gravel; neutral (pH 7.0); clear wavy boundary.
Bt1—7 to 16 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 30 percent gravel and 10 percent cobbles; few faint clay films on faces of peds; neutral (pH 7.0); clear wavy boundary.
Bt2—16 to 26 inches; brown (10YR 5/3) very gravelly clay loam, dark brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 30 percent gravel and 10 percent cobbles; few faint clay films on faces of peds and lining pores; common distinct skeletans on faces of peds; neutral (pH 6.8); gradual wavy boundary.
Bt3—26 to 41 inches; pale brown (10YR 6/3) very gravelly clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few faint clay films on faces of peds and lining pores; common faint skeletans on faces of peds and lining pores; few very fine and fine roots; many very fine and fine tubular pores; 30 percent gravel and 25 percent cobbles; neutral (pH 6.6); gradual wavy boundary.
BC—41 to 60 inches; pale brown (10YR 6/3) extremely gravelly loam, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; 35 percent gravel and 30 percent cobbles; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Tusel-Dollarhide complex, 25 to 60 percent slopes
Location in survey area: About 16 miles north of Gooding; about 500 feet west and 800 feet south of the northeast corner of sec. 3, T. 3 S., R. 14 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—16 to 20 inches
Average annual soil temperature—41 to 43 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist

Rock fragment content—30 to 35 percent gravel and 10 to 30 percent cobbles
Texture—very gravelly clay loam, extremely cobbly clay loam, or extremely gravelly loam

Typic Calciorthids

Depth class: Very deep
Drainage class: Somewhat excessively drained
Permeability: Moderate to moderately rapid
Landform: Escarpments
Parent material: Colluvium and alluvium
Slope range: 20 to 65 percent
Elevation: 2,700 to 3,400 feet
Average annual precipitation: 7 to 9 inches
Average annual air temperature: 50 to 53 degrees F
Frost-free period: 120 to 140 days

Taxonomic class: Typic Calciorthids

Example Pedon

A—0 to 7 inches; pale brown (10YR 6/3) very stony loamy fine sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; 15 percent gravel, 10 percent cobbles, and 10 percent stones; neutral (pH 7.2); clear smooth boundary.
Bk1—7 to 31 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; 5 percent gravel and 5 percent cobbles; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 7.9); clear wavy boundary.
Bk2—31 to 60 inches; very pale brown (10YR 7/3) loamy fine sand, pale brown (10YR 6/3) moist; single grain; loose, nonsticky and nonplastic; 5 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); moderately alkaline (pH 8.0).

Example Pedon Location

Map unit in which located: Rubbleland-Typic Calciorthids complex, 20 to 65 percent slopes
Location in survey area: About 1 mile west of Niagara Springs; about 400 feet east and 1,100 feet north of southwest corner of sec. 3, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to carbonates—0 to 7 inches
Average annual soil temperature—52 to 55 degrees F
Reaction—neutral to moderately alkaline

A horizon:
Value—4 or 5 moist
Chroma—2 or 3 dry or moist

Bk horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—3 or 4 dry, 2 or 3 moist
Coarse fragment content—0 to 5 percent gravel, 5 to 40 percent cobbles, and 0 to 15 percent stones

Vickery Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 2 to 12 percent
Elevation: 4,100 to 4,700 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durorthids

Typical Pedon

A1—0 to 2 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine roots; few very fine irregular and discontinuous tubular pores; mildly alkaline (pH 7.4); abrupt smooth boundary.
A2—2 to 6 inches; grayish brown (10YR 5/2) loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine roots; common very fine continuous tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.
Bw—6 to 12 inches; pale brown (10YR 6/3) loam, yellowish brown (10YR 5/4) moist; strong medium and coarse subangular blocky structure; hard, friable, slightly sticky and plastic; common very fine roots; few very fine continuous tubular pores; mildly alkaline (pH 7.8); clear wavy boundary.
Bk—12 to 17 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; strong fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine roots; few

very fine continuous tubular pores; slightly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; 5 percent weakly cemented displaced duripan fragments 2 to 7 centimeters in length; moderately alkaline (pH 8.2); abrupt wavy boundary.

Bkq—17 to 21 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; massive; hard, friable; few very fine roots; few very fine discontinuous tubular pores; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; 20 percent fractured duripan fragments 2 to 7 centimeters in length; moderately alkaline (pH 8.4); abrupt wavy boundary.

Bkqm—21 to 41 inches; white (10YR 8/1) indurated duripan, very pale brown (10YR 7/4) moist; massive; strongly cemented plates with laminar cap 1 millimeter to 7 millimeters thick and continuous silica and calcium carbonate cementation; few very fine and fine roots matted along horizontal surface of duripan; violently effervescent; abrupt wavy boundary.

2R—41 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Vickery-Paulville complex, 2 to 8 percent slopes

Location in survey area: About 1.5 miles south and 15 miles east of Dietrich; about 720 feet north and 2,700 feet east of the southwest corner of sec. 20, T. 6 S., R. 21 E.

Range in Characteristics

Profile:

Depth to bedrock—40 to 50 inches
Depth to duripan—21 to 27 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:

Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam or silt loam
Clay content—19 to 27 percent
Reaction—mildly alkaline or moderately alkaline

Bk and Bkq horizons:

Value—6 or 7 dry, 5 or 6 moist
Chroma—3 or 4 dry or moist
Texture—gravelly loam, loam, or silt loam
Clay content—10 to 27 percent
Duripan fragments—10 to 20 percent
Rock fragment content—5 to 10 percent
Reaction—mildly alkaline or moderately alkaline

Bkqm horizon:

Thickness of laminar caps—1 millimeter to 7 millimeters

Vining Series

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately rapid
Landform: Basalt plains
Parent material: Eolian deposits
Slope range: 1 to 15 percent
Elevation: 2,900 to 4,700 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Coarse-loamy, mixed, mesic Xerollic Camborthids

Typical Pedon

A1—0 to 2 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine irregular pores; 5 percent gravel; neutral (pH 6.8); abrupt wavy boundary.

A2—2 to 6 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; many very fine and fine irregular pores; 5 percent gravel; neutral (pH 7.0); gradual wavy boundary.

Bw—6 to 20 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common very fine and fine irregular and tubular pores; 5 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.4); gradual wavy boundary.

C—20 to 24 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine irregular and tubular pores; 5 percent gravel and 5 percent

cobbles; mildly alkaline (pH 7.4); abrupt irregular boundary.
2R—24 inches; basalt with discontinuous coating of lime.

Typical Pedon Location

Map unit in which located: Vining-Kecko-Rock outcrop complex, 2 to 12 percent slopes
Location in survey area: About 4 miles south and 4 miles east of Minidoka; about 2,500 feet north and 800 feet east of the southwest corner of sec. 21, T. 8 S., R. 27 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Average annual soil temperature—50 to 53 degrees F
Reaction—neutral or mildly alkaline

A Bk horizon that is less than 6 inches thick is in some pedons.

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—sandy loam, fine sandy loam, or very fine sandy loam
Rock fragment content—0 to 10 percent
Clay content—12 to 18 percent

Wako Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Landform: Basalt plains and buttes
Parent material: Eolian deposits reworked by water
Slope range: 0 to 8 percent
Elevation: 3,200 to 4,000 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Typical Pedon Description

Ap—0 to 8 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 3/3) moist; single grain; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine irregular pores; neutral (pH 7.0); clear smooth boundary.
E—8 to 12 inches; pale brown (10YR 6/3) loamy fine sand, brown (10YR 5/3) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine and medium roots; many very fine, fine, and medium irregular and tubular pores; neutral (pH 6.8); abrupt smooth boundary.
Bt1—12 to 19 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds and lining pores; 5 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.
Bt2—19 to 25 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; common prominent clay films on faces of peds and lining pores; 3 percent gravel; neutral (pH 7.2); clear wavy boundary.
2Bkq—25 to 31 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; few very fine and fine tubular pores; 3 percent gravel; violently effervescent (about 30 percent calcium carbonate equivalent); disseminated lime; 10 percent strongly cemented nodules; coatings of lime and silica on underside of coarse fragments; moderately alkaline (pH 8.0); gradual wavy boundary.
3Bkqm—31 to 43 inches; white (10YR 8/2) indurated duripan; several continuous laminar caps less than 1 millimeter thick and 1 inch to 2 inches apart at a depth of 31 inches; violently effervescent; abrupt wavy boundary.
2R—43 inches; basalt; fractures filled with duripan material.

Typical Pedon Description

Map unit in which located: Ackelton-Wako loamy fine sands, 0 to 3 percent slopes (fig. 19)
Location in survey area: About 3 miles south and 1 mile east of Wendell; 1,800 feet west and 300

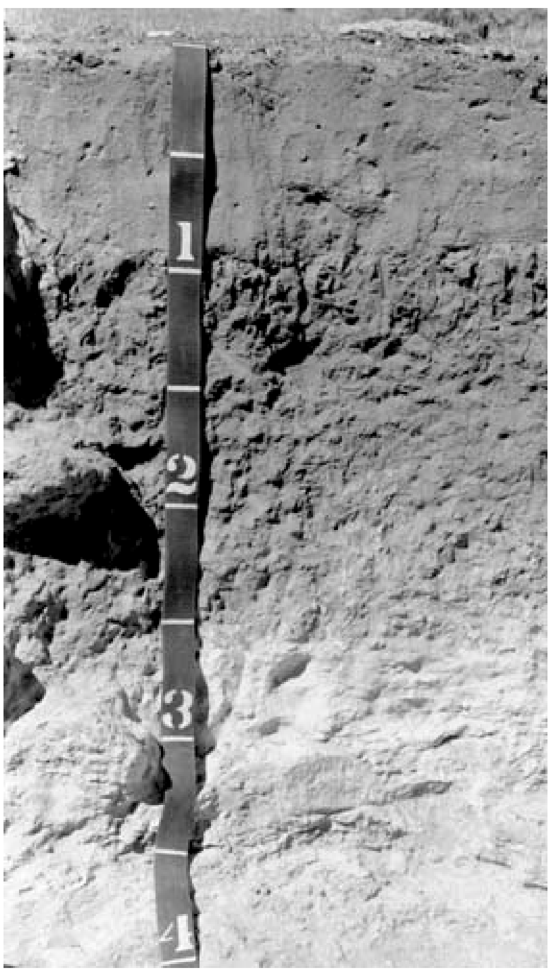


Figure 19.—Profile of Wako loamy fine sand in an area of Ackelton-Wako loamy fine sands, 0 to 3 percent slopes.

feet north of the southeast corner of sec. 19, T. 8 S., R. 19 E.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Depth to duripan—24 to 40 inches
Depth to carbonates—14 to 36 inches
Clay content in particle-size control section—22 to 32 percent
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

E horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—loamy fine sand, fine sandy loam, or fine sand

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—sandy clay, clay loam, or loam
Coarse fragment content—0 to 10 percent
Sodium adsorption ratio—2 to 6
Electrical conductivity—2 to 4 millimhos per centimeter
Reaction—neutral or mildly alkaline

Bkq horizon:
Value—5 to 8 dry, 4 to 7 moist
Chroma—2 to 4 dry, 3 or 4 moist
Texture—loam, clay loam, sandy clay loam, fine sandy loam, or cobbly loam
Coarse fragment content—0 to 35 percent
Lime- and silica-cemented nodule content—5 to 30 percent
Sodium adsorption ratio—2 to 6
Electrical conductivity—4 to 8 millimhos per centimeter
Calcium carbonate equivalent—15 to 40 percent
Reaction—mildly alkaline or moderately alkaline

Bkqm horizon:
Thickness of laminar caps—0.5 millimeter to 5 millimeters
Distance between laminar caps—1 inch to 3 inches

Walco Series

Depth class: Moderately deep
Drainage class: Excessively drained

Permeability: Rapid
Landform: Basalt plains
Parent material: Eolian deposits
Slope range: 2 to 15 percent
Elevation: 3,200 to 4,500 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Mixed, mesic Xeric Torripsamments

Typical Pedon

A—0 to 1 inch; brown (10YR 5/3) fine sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular pores; about 1 percent gravel; neutral (pH 7.0); abrupt wavy boundary.

C1—1 inch to 13 inches; yellowish brown (10YR 5/4) fine sand, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine irregular pores; about 1 percent gravel; neutral (pH 7.0); gradual wavy boundary.

C2—13 to 18 inches; yellowish brown (10YR 5/4) loamy fine sand, dark brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots and few medium and coarse roots; many very fine and fine irregular pores; 1 percent gravel; neutral (pH 7.2); clear wavy boundary.

C3—18 to 21 inches; yellowish brown (10YR 5/4) loamy fine sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine and fine irregular pores; 2 percent gravel and 5 percent cobbles; neutral (pH 7.2); abrupt wavy boundary.

2R—21 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Quincy-Walco complex, 2 to 12 percent slopes

Location in survey area: About 3 miles south and 1 mile east of Wendell; 1,650 feet west and 75 feet south of the northeast corner of sec. 22, T. 8 S., R. 15 E.

Range in Characteristics

Profile:
Depth to bedrock—20 to 40 inches
Average annual soil temperature—50 to 53 degrees F

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

C horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loamy fine sand, loamy sand, or fine sand
Rock fragment content—0 to 5 percent gravel and 0 to 5 percent cobbles
Clay content—0 to 5 percent

Wendell Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate
Landform: Basalt plains
Parent material: Eolian deposits reworked by water
Slope range: 1 to 12 percent
Elevation: 3,200 to 4,200 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Fine-loamy, mixed, mesic Xerollic Durargids

Typical Pedon

A—0 to 2 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; weak very fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots; many very fine irregular pores; 2 percent gravel; neutral (pH 6.8); clear smooth boundary.

E—2 to 5 inches; very pale brown (10YR 7/3) loamy fine sand, brown (10YR 5/3) moist; moderate medium, thick, and very thick platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine, fine, and medium roots; many very fine and fine irregular pores; 2 percent gravel; neutral (pH 6.8); clear smooth boundary.

BE—5 to 12 inches; B part is very pale brown (10YR 7/3) sandy loam, dark yellowish brown (10YR 4/4) moist, and E part is pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate thick and very thick platy; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; many very fine and fine tubular pores and common very fine irregular pores;

2 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt1—12 to 17 inches; brown (10YR 4/3) sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak coarse prismatic structure parting to moderate fine, medium, and coarse subangular blocky; hard, very friable, slightly sticky and slightly plastic; common very fine roots and few fine, medium, and coarse roots; common very fine and few fine tubular pores and common very fine irregular pores; few faint clay bridges between sand grains; 2 percent gravel; neutral (pH 7.0); clear wavy boundary.

Bt2—17 to 28 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine, medium, and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine, medium, and coarse roots; common very fine and fine tubular and irregular pores; few faint clay films lining pores and bridging sand grains; 10 percent cobbles; neutral (pH 7.0); clear wavy boundary.

Bkq—28 to 32 inches; pale brown (10YR 6/3) sandy clay loam, light yellowish brown (10YR 6/4) moist; weak fine and medium subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; 10 percent cobbles; strongly effervescent (about 10 percent calcium carbonate equivalent); disseminated lime; mildly alkaline (pH 7.8); abrupt irregular boundary.

Bkqm—32 to 35 inches; white (10YR 8/2) indurated duripan; silica cap less than 1 millimeter thick at a depth of 32 inches; abrupt irregular boundary.

2R—35 inches; basalt; fractures filled with duripan material.

Typical Pedon Location

Map unit in which located: Wendell-Wako-Ackelton complex, 2 to 8 percent slopes

Location in survey area: About 2.5 miles south and 0.5 mile west of Wendell; about 800 feet east and 1,700 feet south of the northwest corner of sec. 16, T. 8 S., R. 15 E.

Range in Characteristics

Profile:

Depth to bedrock—26 to 38 inches

Depth to duripan—22 to 36 inches

Depth to secondary lime—15 to 36 inches

Clay content in particle-size control section—18 to 26 percent

Average annual soil temperature—50 to 53 degrees F

A horizon:

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Bt horizon:

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Texture—loam, sandy loam, or sandy clay loam

Rock fragment content—0 to 10 percent

Bkq horizon:

Value—6 to 8 dry, 5 or 6 moist

Chroma—2 to 4 dry or moist

Texture—loam, sandy clay loam, or cobbly loam

Rock fragment content—0 to 20 percent

Reaction—neutral or mildly alkaline

Bqkm horizon:

Thickness of laminar caps—0.5 millimeter to 4.0 millimeters

Wildors Series

Depth class: Moderately deep to a duripan

Drainage class: Well drained

Permeability: Moderate

Landform: Basalt plains and buttes

Parent material: Eolian deposits

Slope range: 2 to 15 percent

Elevation: 4,500 to 4,700 feet

Average annual precipitation: 11 to 13 inches

Average annual air temperature: 45 to 48 degrees F

Frost-free period: 90 to 100 days

Taxonomic class: Loamy-skeletal, mixed, mesic Orthidic Durixerolls

Typical Pedon

A—0 to 5 inches; brown (10YR 5/3) very stony sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly plastic and nonplastic; many very fine and fine roots; common very fine irregular pores; 5 percent gravel, 10 percent cobbles, and 40 percent stones; neutral (pH 7.0); clear wavy boundary.

Bw1—5 to 10 inches; brown (10YR 5/3) very stony sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; few very fine tubular pores; 5 percent gravel, 10 percent cobbles, and 40 percent stones; neutral (pH 7.2); clear wavy boundary.

Bw2—10 to 15 inches; yellowish brown (10YR 5/4) very stony loam, dark brown (10YR 3/3) moist; moderate fine and weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; few very fine tubular pores; 10 percent cobbles, 40 percent stones, and 10 percent gravel; mildly alkaline (pH 7.4); abrupt wavy boundary.

Bk—15 to 18 inches; pale brown (10YR 6/3) very stony loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; 10 percent gravel, 20 percent cobbles, and 30 percent stones; strongly effervescent (about 20 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.0); abrupt wavy boundary.

2Bkq—18 to 22 inches; very pale brown (10YR 7/3) very stony sandy loam, yellowish brown (10YR 5/4) moist; massive; very hard, very firm; few very fine and fine roots; few very fine tubular pores; 30 percent weakly cemented, fractured duripan fragments 2 to 7 centimeters in length between rock fragments; 10 percent gravel, 20 percent cobbles, and 30 percent stones; violently effervescent (about 30 percent calcium carbonate equivalent), many masses of lime; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bkqm—22 to 24 inches; light gray (10YR 7/2) indurated duripan, light brownish gray (10YR 6/2) moist; massive; few very fine and fine roots matted along horizontal surface of duripan; 25 percent gravel, 10 percent cobbles, and 15 percent stones cemented in duripan; strongly cemented plates with laminar cap 1 millimeter to 6 millimeters thick and continuous silica and calcium carbonate cementation between rock fragments; violently effervescent; abrupt wavy boundary.

3R—24 inches; lime- and silica-coated basalt.

Typical Pedon Location

Map unit in which located: Deerhorn-Wildors complex, 2 to 8 percent slopes

Location in survey area: About 1.5 miles south and 0.25 mile west of South Park Well; about 2,500 feet north and 1,400 feet east of the southwest corner of sec. 29, T. 3 S., R. 24 E.

Range in Characteristics

Profile:
Depth to bedrock—23 to 30 inches
Depth to duripan—21 to 28 inches
Depth to secondary lime—21 to 26 inches
Thickness of mollic epipedon—7 to 13 inches
Average annual soil temperature—47 to 50 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very stony sandy loam, very stony loam, or extremely stony loam
Rock fragment content—40 to 65 percent
Clay content—11 to 19 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very stony sandy loam or very stony loam
Clay content—11 to 19 percent
Total rock fragment content—35 to 60 percent
Content of cobbles and stones—20 to 55 percent
Reaction—neutral to moderately alkaline

2Bkq horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—8 to 15 percent
Rock fragment content—10 to 30 percent
Duripan fragment content—30 to 40 percent
Reaction—mildly alkaline or moderately alkaline

2Bkqm horizon:
Rock fragment content—50 to 70 percent

Willho Series

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Very slow
Landform: Basalt plateaus and mesas
Parent material: Loess over weathered loess
Slope range: 2 to 8 percent
Elevation: 5,100 to 5,800 feet
Average annual precipitation: 13 to 16 inches
Average annual air temperature: 43 to 45 degrees F
Frost-free period: 70 to 90 days

Taxonomic class: Fine, montmorillonitic, frigid Typic Durixeralfs

Typical Pedon

A1—0 to 2 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine irregular and tubular pores; neutral (pH 7.2); clear smooth boundary.

A2—2 to 7 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine and few medium tubular pores; neutral (pH 7.2); clear wavy boundary.

Bt—7 to 12 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; common faint clay films on faces of peds and lining pores; common faint skeletans on faces of peds and lining pores; neutral (pH 7.2); clear wavy boundary.

Btb1—12 to 23 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and lining pores; common faint skeletans on faces of peds and lining pores; neutral (pH 7.0); abrupt wavy boundary.

Btb2—23 to 31 inches; brown (7.5YR 5/4) clay, dark brown (7.5YR 4/4) moist; strong medium and coarse prismatic structure; extremely hard, very firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many prominent clay films on faces of peds and in pores; common distinct intersecting slickensides on vertical faces of peds; 2 percent gravel and 1 percent cobbles; strongly calcareous layer less than 1 inch thick at lower boundary of horizon; neutral (pH 7.0); abrupt wavy boundary.

Bqmb—31 to 35 inches; light reddish brown (5YR 6/4) indurated duripan, reddish brown (5YR 4/4) moist; massive; silica caps 1 millimeters to 3 millimeters thick; strongly cemented material between caps; fractures more than 4 inches apart; few very fine and fine roots; abrupt smooth boundary.

Bkqmb—35 to 60 inches; light brown (7.5YR 6/4) indurated duripan, brown (7.5YR 5/4) moist; massive; silica and lime caps 1 millimeter to 3 millimeters thick; indurated material between caps; strongly effervescent.

Typical Pedon Location

Map unit in which located: Simonton-Fergie-Willho complex, 2 to 8 percent slopes

Location in survey area: About 16 miles north of Gooding; about 1,500 feet north and 1,900 feet east of the southwest corner of sec. 1, T. 3 S., R. 14 E.

Range in Characteristics

Profile:
Depth to duripan—20 to 40 inches
Clay content in particle-size control section—35 to 55 percent
Reaction—slightly acid or neutral
Average annual soil temperature—45 to 46 degrees F

A horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist

Bt and Btb horizons:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 3 to 5 moist
Clay content—35 to 55 percent
Calcium carbonate equivalent—0 to 5 percent
Texture—silty clay loam, clay loam, silty clay, or clay

Xeric Torriorthents

Depth class: Moderately deep to lacustrine sediment
Drainage class: Well drained
Permeability: Moderate to moderately rapid
Landform: Canyonsides
Parent material: Mixed colluvium and residuum derived from lacustrine sediment (calcareous siltstone and diatomite)
Slope range: 30 to 65 percent
Elevation: 3,300 to 5,400 feet
Average annual precipitation: 9 to 11 inches
Average annual air temperature: 48 to 51 degrees F
Frost-free period: 100 to 120 days

Taxonomic class: Xeric Torriorthents

Example Pedon

A—0 to 2 inches; light brownish gray (10YR 6/2) stony loam, dark grayish brown (10YR 4/2) moist; weak fine and medium subangular blocky structure parting to moderate fine and medium granular; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium tubular and irregular pores; 10 percent soft gravel, 10 percent soft cobbles, and 2 percent basalt stones; strongly effervescent; mildly alkaline (pH 7.5); clear smooth boundary.

AC—2 to 15 inches; light brownish gray (10YR 6/2) loam, brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; common fine and medium tubular and irregular pores; 5 percent soft gravel, 8 percent soft cobbles, 3 percent soft stones, and 5 percent basalt stones; strongly effervescent; mildly alkaline (pH 7.8); clear wavy boundary.

C—15 to 30 inches; light gray (10YR 7/2) loam, brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine and medium roots in fractures; common fine and medium tubular pores and few fine and medium irregular pores; massive; 25 percent soft gravel and 70 percent soft cobbles; violently effervescent; moderately alkaline (pH 7.9); clear wavy boundary.

Cr—30 inches; calcareous laminar unconsolidated lacustrine sediment.

Example Pedon Location

Map unit in which located: Aridic Argixerolls and Xeric Torriorthents soils, 30 to 65 percent slopes

Location in survey area: On a west-facing canyonside along Clover Creek; 1,750 feet south and 1,160 feet west of the northeast corner of sec. 3, T. 4 S., R. 13 E.

Range in Characteristics

Profile:
Depth to soft lacustrine sediment—20 to 40 inches
Average annual soil temperature—47 to 50 degrees F

A horizon:
Value—5 or 6 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Clay content—15 to 27 percent
Calcium carbonate equivalent—0 to 25 percent
Soft coarse fragment content—0 to 40 percent
Hard coarse fragment content—0 to 10 percent gravel, 0 to 10 percent cobbles, and 0 to 3 percent stones
Reaction—neutral to strongly alkaline

AC horizon:
Value—5 or 6 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Clay content—15 to 27 percent
Calcium carbonate equivalent—0 to 25 percent
Texture—loam or gravelly loam
Soft coarse fragment content—10 to 50 percent
Hard coarse fragment content—0 to 10 percent gravel, 0 to 10 percent cobbles, and 0 to 3 percent stones
Reaction—neutral to strongly alkaline

C horizon:
Value—7 or 8 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Clay content—15 to 27 percent
Calcium carbonate equivalent—0 to 25 percent
Texture—loam or gravelly loam
Soft coarse fragment content—80 to 95 percent
Hard coarse fragment content—0 to 10 percent gravel, 0 to 10 percent cobbles, and 0 to 10 percent stones
Reaction—neutral to strongly alkaline

Formation of the Soils

By Maureen Boling and Mark Johnson, Natural Resources Conservation Service.

Soil is a natural, three-dimensional body on the earth's surface in which plants grow. The characteristics of a soil are determined by the interaction of five soil-forming factors—parent material, climate, topography, and living organisms acting together over time. Soils are mixtures of varying proportions of minerals, organic matter, water, and air. Soils also contain many living things.

Soils are characterized by a vertical sequence of layers, or horizons, that vary in color, texture, chemistry, and structure. The appearance, productivity, and management requirements of different kinds of soils vary greatly, sometimes within short distances.

Parent Material

Soils are strongly influenced by the characteristics of their parent material, particularly the mineralogy and texture (fig. 20). The soils in the survey area formed in loess, eolian sand, alluvium, lacustrine deposits, and residuum and colluvium derived from welded tuff, rhyolite, and basalt. Volcanic ash may have been an important component of the loess deposited in the survey area, perhaps contributing to the development of duripans and argillic horizons in the soils *(17)*.

Wind-deposited parent material is dominant in the survey area, and residual parent material is rare *(11, 19)*. On the basalt plains, the parent material is dominantly eolian silt and sand, which is locally reworked by water. The loamy Wendell and Taunton soils and the silty McPan soils formed in eolian material in convex positions on basalt flows. The soils in concave positions on basalt flows formed in wind-deposited material that was washed by rain and melted snow from higher positions and redeposited in small basins. Thus, the soil-stratigraphy pattern resembles that of lacustrine or slackwater deposits rather than that of eolian deposits *(13)*. Examples include the loamy Paulville and Ackelton soils and the silty Power and Purdam soils.

Wind-modified alluvium and slackwater deposits are also present in the survey area. Throughout the Pleistocene, basalt flows have periodically dammed and redirected the Big Wood, Little Wood, and Snake Rivers, depositing material on basalt flows. Much of this material was later redistributed by the prevailing southwesterly winds *(14, 15)*. Sandy soils are common downwind of past and present stream channels. Coarse-loamy and sandy soils, such as those of the Vining, Kecko, and Fathom series, formed in sandy eolian material. Torripsamments, such as those of the Quincy and Walco series, formed in eolian sand.

Most of the soils on the foothills in the Bennett Hills area formed in a mixture of loess, colluvium, and residuum derived from Idavada volcanics, a thick sequence of welded ashflow tuff and vitric tuff lava flows of the Miocene *(21)*. The most notable is the "City of the Rocks" tuff, a thick dacitic ignimbrite that weathers to channers and gravel and is associated with the Connet, Gaibson, and Terracecreek soils. In contrast, the Mulshoe, Elkcreek, Simonton, Nammoth, and Quiero soils formed in tuff in which the glassy matrix weathered readily leaving behind quartz-rich sand grains *(3)*.

The deeply dissected plateaus of the Bennett Hills area have ancient clay-rich soils that formed in loess during the early Pleistocene or late Pliocene. The topsoil has been completely eroded away from most of the soils on these severely faulted plateaus. These plateaus now are covered with churning clay soils (Vertisols and Vertic intergrades) that support very little vegetation and heave stones, cobbles, and roots of poorly adapted plants to the surface. Examples include soils of the Hobby, Tschamman, Blisshill, Schooler, and Duguesclin series. Bray soils, which do not have Vertic characteristics, are in the most stable positions on the plateaus. These soils have a mantle of young loess over clay-rich, old weathered loess.

Many soils in the survey area have a duripan (lime- and silica-cemented hardpan). For a duripan to form, soluble lime and silica must be present in the parent material and sufficient water must move

1. Snake River
2. Tupper-Fathom-Ephrata (unit 3)
3. Fathom-Kudlac-Rubbleland (unit 1)
4. Fathom-Taunton-Jestrick (unit 15)
5. Wendell-Wako-Ackelton (unit 13)
6. Paulville-McPan-Starbuck (unit 4)
7. Quencheroo-Burch-Dryck (unit 2)
8. Gooding-Catchell-Power (unit 8)
9. Fergie-Terracecreek-Gaibson (unit 16)

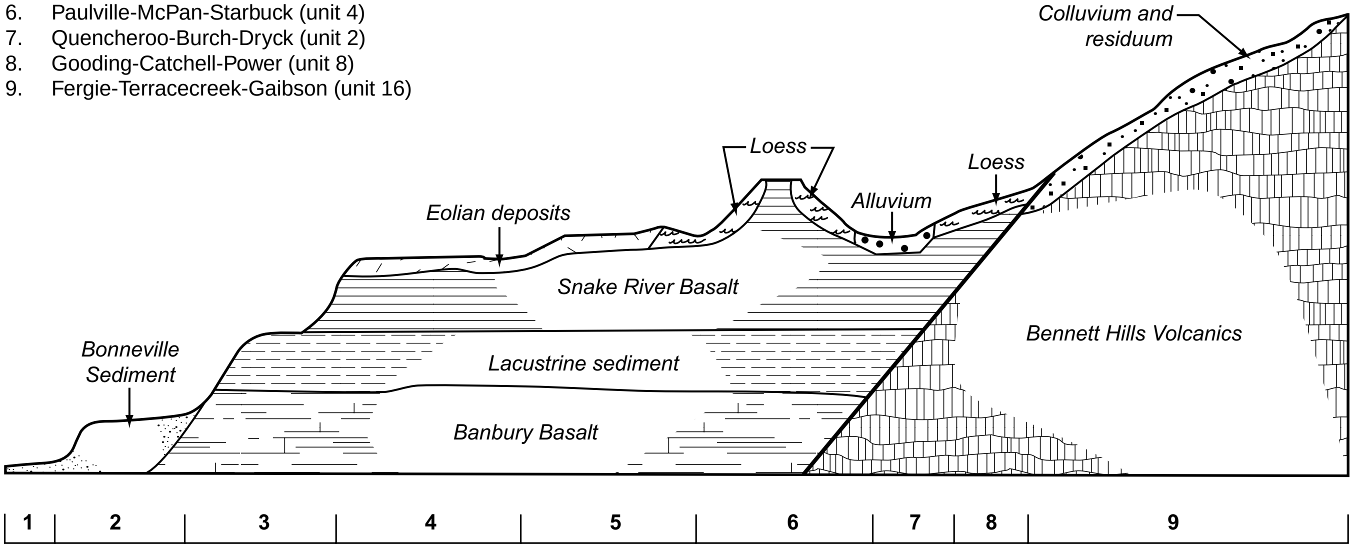


Figure 20.—Sequence of general soil map units along an idealized south to north transect along U.S. Highway 46, from the Snake River at Niagra Springs to the Camas County boundary.

through the soil profile to translocate the lime and silica *(9)*.

Duripans form at hydraulic discontinuities in the soil profile. Many duripans formed at the soil/basalt interface in soils, such as those of the Wendell, Snowmore, McPan, and Rekima series *(12)*. Some soils have duripans that formed at the boundaries of layers of parent material that have dissimilar porosities. The Chilcott soils, near Clover Creek, are an example. These soils formed in loess over gravelly alluvium of the Glenns Ferry Formation.

Some of the oldest duripans in the survey area do not contain carbonates. Examples are those of the Bray, Blisshill, and Tschamman soils, which have a Bqm horizon instead of a Bkqm horizon.

Time

The different horizons in the soil profile and their degree of development are directly related to time (see table on facing page). The soils in the survey area range from several hundred years old to millions of years old. Time and climate have a complex relationship; local climatic conditions during the Pleistocene ranged from much cooler than the present climate to warm and moist *(20)*. Similarly, sources of silty and sandy material have changed dramatically over time as a result of continued damming and redirection of rivers on the Snake River Plain. Also, volcanic ashfall may have been a major factor in the development of argillic horizons.

Many, perhaps most, of the soils in the survey area formed in several different kinds of parent material deposited at different times. Dramatic examples include soils of the Gooding, Catchell, Bailing, Marley, Bray, and Kinzie series, which formed in young loess deposited over truncated clay-rich paleosols of the middle Pleistocene to Pliocene. In the Minveno and Besslen soils, the entire original soil was eroded away, leaving only a thick duripan that was later covered by a thin mantle of young loess *(13)*. Chronosequences of sandy and silty parent material on basalt flows of various ages illustrate the effects of time on soil development. With the passage of time, first cambic horizons form and then argillic horizons and duripans form. Generally, over time soils and duripans become thicker and clay accumulations increase.

The topography and hydrology of the basalt plains also has changed over time. Old basalt flows have drainageways and external drainage; young basalt flows have closed topographic contours and internal drainage. On basalt plains of the recent to middle Pleistocene, water-transported silt and salts collect in closed basins and ephemeral lakes, or playas, dot the landscape in spring. Seasonal lakes must have been much larger and must have received much more

Chronosequence of Soils that Formed in Silty Parent Material on Basalt Plains

Age (years)	Soil Development	Representative Soil Catena
750-2,000	Scant soil development	Lava flows-Lithic Torriorthents
2,000-12,000	Cambic horizons	Starbuck-Bahem-Rock outcrop
12,000-200,000	Weak argillic horizons, thin duripans.	McPan-Power-Starbuck
200,000-2,000,000	Strong argillic horizons, thick duripans.	Gooding-Catchell-McHandy

sediment during glacial periods, when spring runoff in southern Idaho was estimated to have been ten times higher than it is at present *(9, 20)*. Farmell, Power, and Paulville soils formed in these areas.

The ages of the soils in the survey area that formed in stream or lake deposits vary greatly. Many alluvial soils, such as those of the Burch, Quencheroo, Loupence, and Dryck series, are very young. Somewhat older soils, such as those of the Ephrata and Tupper series, developed in loess over coarse-sandy or bouldery alluvium deposited by the catastrophic Bonneville Flood, which gouged out the Snake River Canyon about 30,000 years ago *(10)*.

The interbedded lacustrine and alluvial sediment deposited in Lake Idaho, such as the Glenns Ferry Formation of the Pliocene, is much older. This sediment typically is silty and calcareous, and it is exposed on steep slopes in the Hagerman, Bliss, and Clover Creek areas. Soils that formed in this sediment include those of the Kudlac and Anchustequi series and Typic Calciorthids, Xeric Torriorthents, Aridic Argixerolls, and Argixerolls. The Little Wood soils near Flat Top Butte formed in the gravelly alluvium of the Hash Formation of the middle Miocene *(15)*.

Climate

Climate strongly affects the weathering of soil parent material and the presence and productivity of organisms. Temperature and precipitation affect the rate and type of weathering, leaching, illuviation, and biomass accumulation. Soils in the higher precipitation areas usually have darker topsoil than do similar soils in drier areas.

In general, as precipitation increases the depth of wetting and the depth to carbonates also increase, except in areas where the parent material is rich in carbonates. Similarly, different kinds of parent material create many exceptions to the generalization that base saturation decreases as precipitation increases. Most of the parent material in the Snake River Plain was deposited by wind; thus, wind is an important soil-forming agent in the survey area. The prevailing wind is from west to east; consequently, sandy soils commonly are east of both active and abandoned stream channels.

Topography and Relief

Topography, or the shape of the landscape, and relief, or the differences in elevation, influence soil formation by affecting erosion, effective precipitation, soil drainage, and exposure to sun and wind. The survey area has a wide range of landforms.

Much of the area lies on the Central Snake River Plain, a mosaic of basalt plains and low-shield volcanoes, locally called “buttes” *(16)*. The largest buttes rise 200 to 400 feet above the Snake River Plain, which has very little relief other than the buttes. The regional style of basaltic volcanism produced a hummocky surface with pressure ridges and plateaus, flow ridges, and collapse depressions *(7)*.

The amplitude of the undulations in the flow surface has an important effect on soil development. Flows with less than 10 feet of relief tend to be covered dominantly with moderately deep soils. Rock outcroppings on these flows tend to become covered with eolian material relatively quickly. In contrast, flows with more than 25 feet of relief tend to have

Topographic-Climatic Sequence of the Soils on Basalt Plains

Soils	Elevation (feet)	Average annual precipitation (inches)	Average annual air temperature (degrees F)	Average annual soil temperature (degrees F)
Snowmore and Gooding	3,150-4,250	9-11	48-51	50-53
Deerhorn and Marley	4,250-5,000	11-13	45-48	47-50
McCarey and Starhope	5,000-5,800	13-16	43-45	45-46

steeper slopes and tend to be covered with very deep soils and rock outcroppings. Also, exterior drainage on these flows develops slowly. Flows with 10 to 25 feet of relief tend to be covered with associations of three soils that vary in depth.

The Bennett Hills area is a region of moderately sloping foothills and plateaus that are deeply dissected by very steep canyons. The soils on the steepest slopes, such as those of the Burwill series, typically exhibit relatively little soil development. In contrast, the soils on the stable, old, level to gently sloping land surfaces exhibit a high degree of development. The soils on the old basalt plains and plateaus that have slopes of 1 to 8 percent have a subsoil that is extremely rich in clay. Examples include soils of the Gooding, Catchell, Bailing, McHandy, Hobby, and Tschamman series.

The steeper soils magnify the differences in aspect in the Bennett Hills area, which strongly affects the microclimate and soil development. Soils on north and east aspects receive less sunlight than those on south and west aspects. As a result, the soil temperatures are lower and the snow stays on the ground longer, providing moisture longer into the growing season. The higher effective precipitation on north- and east-facing slopes results in a thicker plant cover, which helps to minimize erosion. The soils on these slopes, such as those of the Moreglade series, have thicker and darker topsoil than do those on south- and west-facing slopes, such as those of the Fergie series.

As the elevation and average annual precipitation increase and the average annual air and soil temperatures decrease, the amount of organic matter in the upper part of the soil increases, resulting in a darker colored surface layer. The table above shows a catena of soils on basalt plains ranging from the low, dry and warm Snowmore and Gooding soils to the higher, moister and cooler McCarey and Starhope soils. The table identifies the elevational and climatic ranges associated with increased organic matter.

The soils on ridges and in convex positions have less effective moisture than do the soils in other positions because the wind tends to blow away the snow and the moisture tends to run downhill to lower landscape positions. Conversely, the soils in basins and concave positions commonly receive significantly more moisture than do those in other positions *(18)*.

The higher amount of moisture in the soils in basins tends to leach lime, bases, and amorphous silica to a greater depth than in the soils on ridges and side slopes. An example is the Deerhorn-Rehfield-Rock outcrop complex, 2 to 15 percent slopes. The Deerhorn soil on side slopes has a calcic horizon and a duripan, but the Rehfield soil in basins and drainageways does not have a calcic horizon nor a duripan and does not have sufficient calcium and magnesium ions to be considered Ultic or to have low base status.

Landscape position also affects soil depth. Loess tends to wash off convex positions and accumulate in concave positions. The soils in convex positions generally are shallow or moderately deep. Examples include Starbuck, Rekima, Minveno, and Polecreek soils on basalt plains and buttes and Connet, Gaibson, and Terracecreek soils on foothills.

Living Organisms

Plants, micro-organisms, insects, worms, and other organisms affect soil development by adding organic matter, stirring and aerating the soil, and cycling nutrients and energy. The kinds and amount of living organisms are largely determined by climatic factors and by human activities.

Human activity presently is the most dynamic soil-forming agent in the survey area. A positive trend is an increase in organic matter as a result of irrigation, especially in areas of pasture and hay. In some areas of the 9- to 11-inch precipitation zone, light-colored topsoil (ochric epipedon) is changing to darker colored topsoil (mollic epipedon). Great differences in soils are sometimes observed along fencelines. For example, deep plowing has changed the surface texture from sandy to loamy in areas where the argillic horizon was mixed with the sandy eolian topsoil. Deep plowing and land leveling have mixed some soil profiles, creating Entisols and Calciorthids. Soil fertility is reduced when carbonates and duripan fragments are brought to the surface, as in the Besslen soils. Irrigation-induced erosion is reducing the depth of soils on ridges and side slopes, such as those of the McPan series, and increasing the thickness of the topsoil in the soils in concave positions, such as those of the Power series.

Soils at elevations below 4,500 feet support limited vegetation and soil biomass, and they have a light-colored topsoil. Below an elevation of 3,200 feet, in the 7- to 9-inch precipitation zone, plants such as Wyoming big sagebrush and Thurber needlegrass are dominant. The main plants in the 9- to 11-inch precipitation zone are Wyoming big sagebrush, basin big sagebrush, and bluebunch wheatgrass. Sandy soils support mainly basin big sagebrush, Indian ricegrass, and needleandthread.

Many of the soils between elevations of 4,250 and 5,000 feet have thin, dark-colored topsoil. Examples include those of the Marley, Nammoth, Kinzie, Darrah, Hamrub, and Quiero series. The dominant plants on the loamy soils in the 11- to 13-inch precipitation zone are xericensis big sagebrush, Wyoming big sagebrush, threetip sagebrush, basin big sagebrush, and bluebunch wheatgrass.

Soils that are shallow to clay or bedrock support less vegetation and have lighter colored topsoil than do deeper soils in the same precipitation zone. Soils that have a clayey subsoil at a shallow depth include those of the Bailing, Bray, Hobby, and Tschamman series, and soils that are shallow to bedrock include those of the Connet, Gaibson, and Ruckles series. All of these soils support a plant community of low sagebrush and bluebunch wheatgrass.

Vegetative production is much higher on soils that formed at elevations above 5,000 feet. These soils support mountain big sagebrush and Idaho fescue, receive 13 to 16 inches of precipitation, and have cooler temperatures. The abundance of fibrous roots and mulch produced from sagebrush leaves creates dark-colored topsoil. Examples are soils of the Mulshoe, Elkcreek, Moreglade, Molyneux, and Simonton series.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo. The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in alluvium.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche. A more or less cemented deposit of calcium carbonate in soils of warm-temperate, subhumid to arid areas. Caliche occurs as soft, thin layers in the soil or as hard, thick beds directly beneath the solum, or it is exposed at the surface by erosion.

California bearing ratio (CBR). The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax plant community. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Congeliturbate. Soil material disturbed by frost action.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline.

The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	less than 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep-sided channel resulting from accelerated erosion. A rill generally is a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite. Unconsolidated residual material underlying the soil and grading to hard bedrock below.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 4 percent
Moderately sloping	4 to 8 percent
Strongly sloping	8 to 20 percent
Moderately steep	20 to 30 percent
Steep	30 to 60 percent
Very steep	60 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Tephra. A clastic volcanic material, such as ash, cinders, scoria, and pumice, that is ejected from a vent during an eruption.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,” “fine,” or “very fine.”

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland. Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth’s surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.